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ABSTRACT

Written for parents to use in the home environment, this illustrated handbook describes the Maxi-Move program, an intensive one-year program of exercise for children of one to eight years of age, who have cerebral palsy. The program does not use physical therapy, patterning, or specific movement goals, but focuses on having fun, creating environments conducive to movement and exercise, and use of everyday tasks (such as feeding or bathing) as bases for the child's exercise and motor development. The nature of cerebral palsy and its effects on the body are described, and the underlying rationale for the exercises is explained, as are the learning processes involved in their use. Exercises designed for or involving relaxation, arms, aerobic fitness, hands, head, neck, rotation, balance, turning, backs, legs, shoulders, feet, and mouth are described and illustrated in detail. An annotated bibliography of about 30 citations is included. (CB)

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CEREBRAL PALSY

NOT NECESSARY

MAXI-MOVE

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DO IT YOURSELF FOR PARENTS

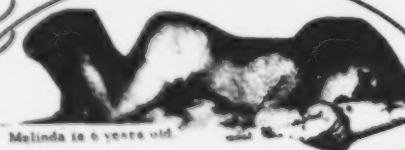
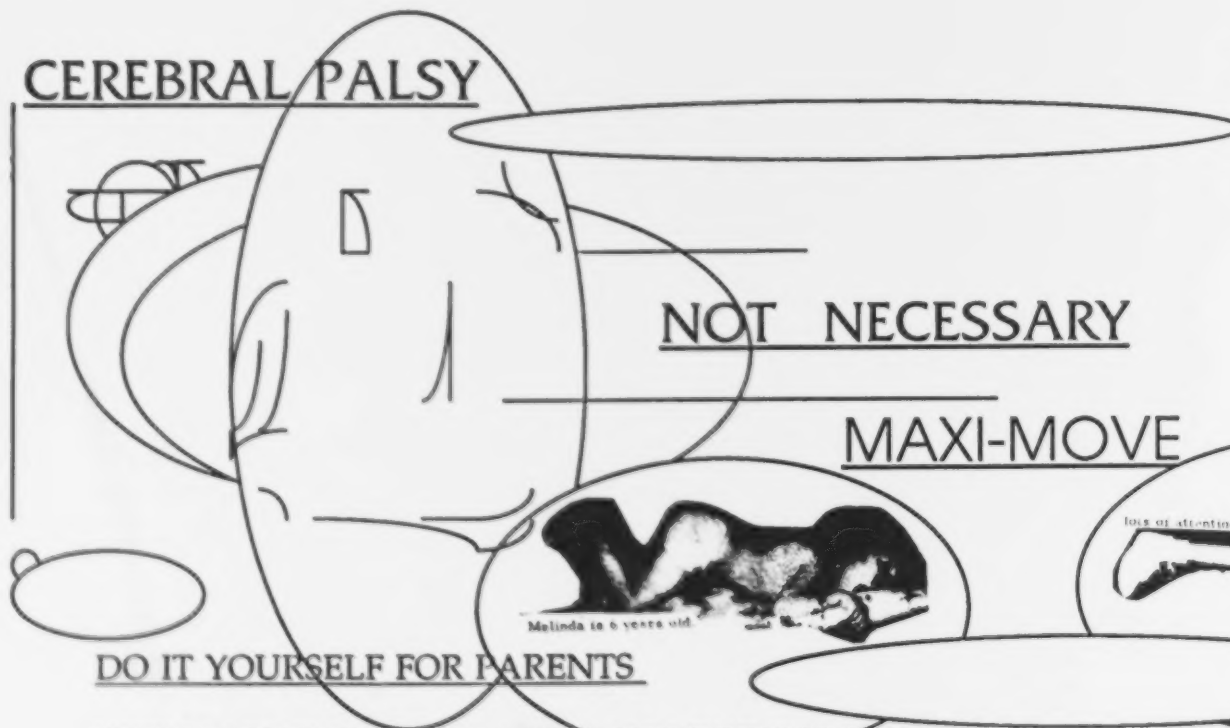
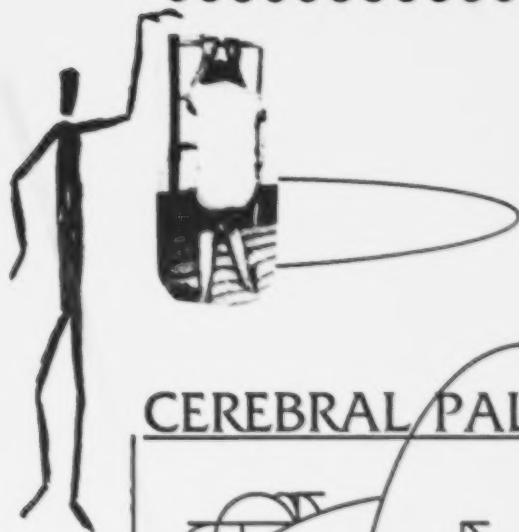
WITH MOVEMENT DELAYED CHILDREN UNDER EIGHT

By H. WINKY LOTZ

WILLYSHE PUBLISHING CO., LINTHICUM HEIGHTS, MD

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Melinda is 6 years old.



loss of attention and joy

Three weeks later

No operation is needed!

Dedication:

To Anna S. Morris and Bill Douglas, without whose constant encouragement and support I could not have approached this level of achievement.

Thanks, Anna and Bill.

Thanks also to all those who helped to create this MAXI-MOVE PROGRAM, to all those parents and children who went through the program to test it: especially to Frances Osborn and Melinda, to Marie Joe, the Rasmussens, Cilia, Mary Beth, Walter, Joe Dubritton, Don Barlow and Johanna.

Special thanks also to Earl Douglas who donated his time and skills to document the progress of Melinda; the photographs are excellent and characteristic.

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INTRODUCTION:

Jacqueline Mast responds:

"What parents should do and what is possible for them to do are not always the same. The reality of living with a handicapped child is summed up by this mother:

"What so many professionals do not understand is that this child is such a drain to me, that just living with her is all I can manage. I do not have the emotional energy to be patient with her every night for a skill that will take her months to master — that she may never master."

"If we ask too much of a parent, we compromise the parental/infant relationship."¹

The MAXI-MOVE PROGRAM may be unpopular to health-care providers, for addressing this program to parents exclusively; for obligating parents to commit their time of two and a half hours each day for one whole year to exercising their handicapped child; for admonishing the parents not to skip an exercise period, not even on Sundays.

Movement delayed infants and children are deprived of learning. Many studies have shown conclusive evidence of the substantial relationship between IQs and motor skill proficiency. Whenever the deficiency in motor skill proficiency was taken care of, the IQ deficiency was automatically upgraded. The latest data to this effect was reported in March 1986 by Dr. Connolly.¹

Physical therapists and other certified health care deliverers shy away from burdening parents with special suggestions. This must be understood, for the physical therapist only attends to a movement delayed child for 30 minutes per week, if that much², while the parent has to cope with this often uncuddly child 24 hours per day 52 weeks per year for his first twenty years, if not throughout his life.

¹ see: Connolly 1989 ² Baltimore

¹ Ashmore, 1985

THERE IS, HOWEVER, A DIFFERENCE:

The MAXI-MOVE PROGRAM does not ask the parents to have "the patience to teach" their child "a task which she may or may not ever master". The MAXI-MOVE PROGRAM is not at all task oriented. Indeed, the whole family is encouraged turn the program into a recreational adventure, to listen to music, enjoy TV programs, and/or adapt the exercises for their child into physical fitness sessions for themselves.

An uncuddly child actually changes so much that he may turn cuddly as soon as he passes over the threshold from motionless to having movement ability. He may even become the best pal ever, eating out of your hand.

We "appreciate the parents' role in coping" with a movement handicapped child and respect the parents' need to lessen their physical burdens. However, this is the basic reason for designing this program: it is much easier to sacrifice one year, (especially when you see dramatical changes in your child from one day to the other), than "to cope" as best as you can, worn out over the years, disillusioned and burned out. It is one thing to carry around a child of two, or even of six, and an entirely different ball game to lug around a twenty year old. The investment of your time during one year is incomparable to coping for twenty years. That year will pass very quickly!



It is important: **THE PROGRAM SHOULD BE STARTED AT THE EARLIEST AGE!** There is a supplement for parents with a child under one year of age. In fact, parents can start right after birth, as long as the newborn is pronounced **OTHERWISE** healthy. You may ask: but what if the baby was normal, after all? So what — the exercises are *not harmful*, they were all designed to give healthy babies a head start. If it was a high risk child from birth and at one year of age he is normal — I for one would not need to know what caused him to be "normal".

For a laterally affected child that was **not operated** on, this program may be started at any age; it is never too late. But only if you, parents, take the time; for the child himself cannot do it, or he would have done so long ago.

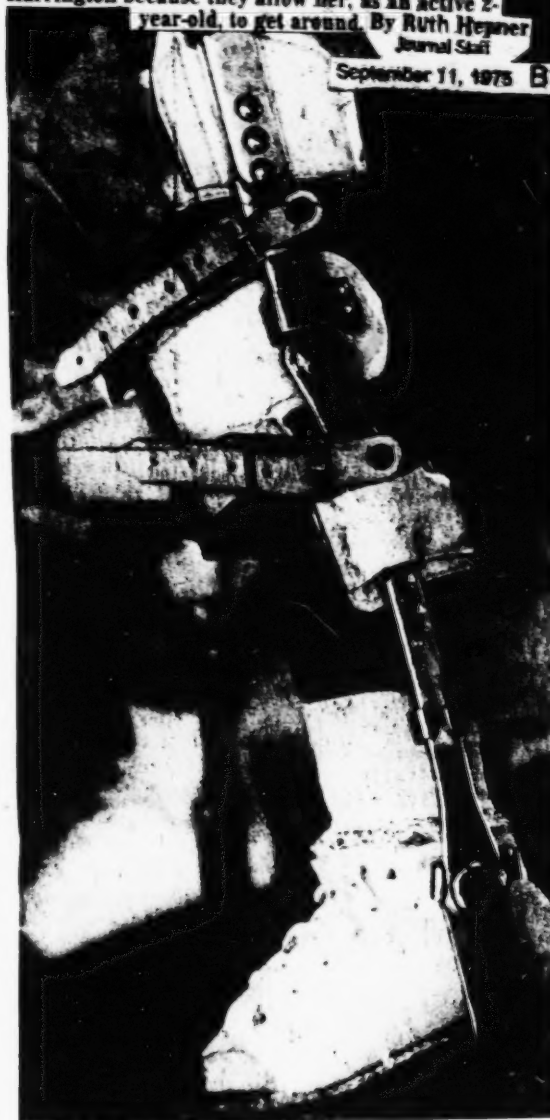
For a spastic child, do all the exercises, however, read the instructions first and use pressure splints* from the outset. (Should you have trouble obtaining them locally, you may obtain them through the MAXI-MOVE PROGRAM*.)

Braces are an encumbrance.¹ Just considering the additional weight, other muscles must compensate for it, meaning wrong movements. If your child is used to wearing braces, let him wear them to school only. His coordination and strength should improve very rapidly. As soon as he feels comfortable without braces, let him do without.

Access to a whirlpool, and/or a Sauna, would be a great addition which can be enjoyed by all the family. You can do the exercises there instead of at home, a good substitute for the bath at night. If you have a swimming pool, wading and swimming are wonderful exercises (even if you have to put his trunk and chin on a board); it is something the whole family can enjoy. The sun will heat him up in between swims, and you can rub him down just the same with sun tan lotion. Make that year as happy and free for all as you can. A happy heart goes a long way!

Leg braces and a walker are friends to Renee Harrington because they allow her, as an active 2-year-old, to get around. By Ruth Heyner
Journal Staff

September 11, 1975 B1



CEREBRAL PALSY IS NOT NECESSARY

An instruction manual for parents with children
who show movement delay.

This manual is written for ordinary people and not addressed to specialists in the health care field. You parents must take your infant or child for a physical before commencing the program. The physician must give your child a clean bill of health, and must assure you that he has a normal bone structure of an active child. It is not for children with progressive conditions.

The degree of delay does not matter, neither does the degree of involvement. The earlier you parents are willing to accept that your child has a movement inability the better the outcome.

Mental delay in movement delayed infants and children of any age is circumstantial and not at all basic. To assess the intelligence of the child:

- a) take a bright object and catch his eye contact, move it slowly right and left and move it in circles, hold it close, and as far away, without losing his attention.
- b) have someone clock how long your little one paid attention to the object. A baby of four months, watching the object for a minute or longer, has the intelligence to recover fully and any child following the object for as much as five minutes, is very bright.

Next you test your child for hearing. Put his left ear into a cushion and clap your hands. If your little one shrinks or looks startled, it hears with the right ear. Now turn him so the right ear is on the cushion and clap your hands. If he reacts, you know that he can hear with the left ear.

NO HEARING:

Suppose the eye contact test indicates normal intelligence, but you found a lack of hearing. The diagnosis is just as bright, but you know, all the coaxing and voice coloring you may have applied was of no avail, your child simply cannot hear. Don't panic, there is a substitute. You have to do everything by first making eye contact. You must show everything by pantomime and feeling: hot - cold, sour-sweet, pleasant - unpleasant, wet - dry, dirty - clean. You are the mother of invention and you learn to act out everything you do, reinforcing it by letting him/her see and feel the difference. By the end of the year you will be amazed how much your little one can lip read with a very bright future. Yes, he has the hearing handicap for life (may be), but because you dealt with it right from the beginning, it will not be an obstacle.

A WORD TO THE PARENTS:

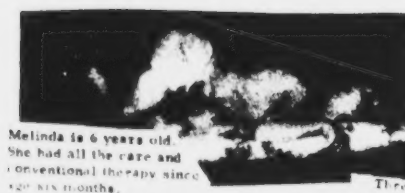
Why did this happen to you? Rest at peace, it is not your doing. Why do some adults (all ages) get crippled by strokes? Why do even teenagers die of heart attacks? Nobody knows the answer. Most generally your baby was perfectly alright in the womb, where it moved normally. When the baby is to be born, its activity center in the brain is the one which gets overstimulated and that is where the hemorrhages has occurred. That does not mean that it has no brains and that it cannot learn. The question is how does a brain learn?.

That is why this manual has been designed. It wants to give you parents a tool to gain the upper hand on this handicap. You have to be happy that your baby is alive, like any relative of a stroke victim. You have to be courageous - there is no guilt trip necessary, you had no control over the situation to prevent it. Even a movementless baby can sense when you feel disheartened. From now on you are partners, the child and you. In the end you will be a happier family than if your child had had no problems. You will not only have given your child life, but also the ability of doing things on his own. Take heart. To get an inkling of the changes to come, it takes only three weeks into this program.

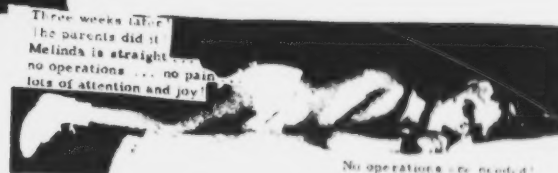


THE PROGRAM'S DURATION:

For the fullest benefits, you are committing yourself and the family to give your child one year of your fullest attention. Like eating, drinking, going to sleep and getting up, this attention has to come mornings, noons and nights and cannot be skipped a day during one whole year. It does not matter at all who is giving the attention: Aunt Nelly, Uncle Joe, grandma or grandpa, your neighbor or a baby sitter, just as long as the half hour is not skipped. Please make it as pleasant and as interesting for yourself as possible. Borrow tapes or records from the public library. You need absolutely no special skills. Make yourself comfortable. The longer you stick it out in the end, the greater the benefits for your child. The Maxi-Move Program has been carefully constructed to take only one full year.



Melinda is 6 years old.
She had all the care and
conventional therapy since
she was 6 months.



Three weeks later
the parents did it
Melinda is straight
no operations ... no pain
lots of attention and joy!

No operations are needed!

HOW DOES THIS PROGRAM DIFFER FROM ALL OTHER PROGRAMS?

1. It is concentrated to last only one year for maximum effectiveness.
2. There is no patterning, and no physical therapy.
3. It does not interfere with any other program or vice versa.
4. Progress is noticeable within three weeks.
5. The soul of the program is to let the child have fun. It teaches the child to feel and enjoy himself.
6. None of the movements are goal oriented, that is, no specific movements are to be taught.
7. There is no right way or wrong way to administer the exercises. A clumsy grandfather adds as much zest as an auntie who has never dealt with babies. Both approaches add a great deal. In the diversity of approach lies the spice.
8. One person at a time can handle a small child under six, unless he weighs 40 or more pounds, and even then, ways are shown to let one person succeed.
9. When the baby/child cries it is a signal to stop immediately and take a break, then use an other approach. This is normal for all children.
10. Feeding, bathing, etc. are an integral part of the program; it is designed to help you to make the most of the inevitable every day tasks, "handling", as exercises.

HOW TO CREATE AN ENVIRONMENT INDUCIVE TO MOVEMENT:

1. Provide for your child a hard mattress, extra firm. Relegate all contour molded carriers to the attic. A hard mattress on a board will do. Please no lumps or valleys! Put your child on the stomach, even if he looks like a grasshopper, and does not like it. From now on this is his/her normal position when at rest. A playpen is just fine. What he is able to do on his own, will dramatically increase as he is discovering himself. At all times make sure that there is no danger in case he should tumble over on his own. Curtail the use a wheel chair except for distance transportation and for taking meals. When in a car seat put on the neck collar*.

2 Create a contrasting, *a distinctly different* atmosphere for day and for night! This is important, because movement delayed children don't have a sense of time.

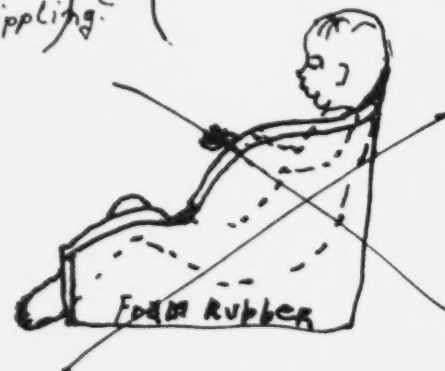
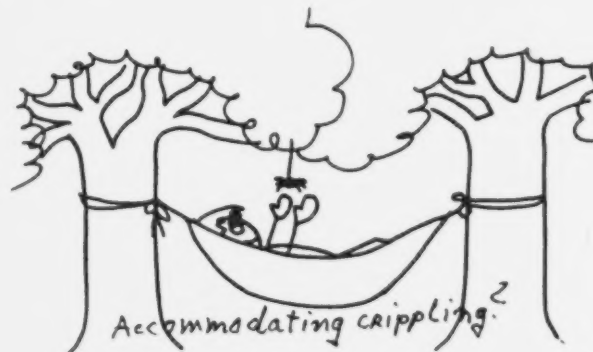
a) In the daytime:

Dress your child each morning at the same time, this includes Saturdays and Sundays. Put on *high laced sneakers* or shoes which cover his ankles (they are to add also a little weight). Make sure they fit well. Shoes have several benefits: they protect the toes from getting bumped. They keep the toes pointing in the right direction and one can get a good hold on them to do the foot exercizes. They give traction when crawling and keep the feet warm and the socks in place. Put his pad or playpen into the living room or kitchen where all

the other activity is going on and he can partake on the general hubbub. On his/her stomach, please!

b) Nighttime:

Put your child to sleep in the quietest place in your house or apartment. Lights are to be kept dim or turned off. Be careful that there is good ventilation in the room but no draft touching your little one. Keep all noises to a minimum and talk with a low voice or not at all when diapering. This is very essential because movement delayed infants and children have no concept of day and night. Making a noticeable break between day and night serves for a built in clock of expectancy and timing. It provides a better atmosphere for sounder sleep.



RATIONALE FOR THE EXERCISES:

Studies have shown that when man is exposed to weightlessness (space program) for 45 days or more his body automatically shuts down his normal metabolism cycle. After 45 days in orbit the bones of an astronaut shrink measurably and the composition of his bone tissue is altered.¹

While man is walking, his whole skeletal frame crunches with every step, setting the stage for a healthy alignment of the bone by signaling to the metabolism for mineralization, an increasing supply of calcium and oxygen.²

To simulate the effects of weightlessness, healthy GI volunteers were put to bed for months. The result was that their bones, too, shrank in size, and the alignment of their bone structure changed, calcification stopped completely and the kidneys began to rid the body by removing the excess of calcium. Their metabolism had shut down automatically after 40 to 50 days, because the requirements of their body were altered, strong alignment was no longer an advantage.

At the end of the study the army physicians divided the volunteers into two groups. The one group was left to their own devices to get back into shape and on their feet, while the other half was remobilized by passive exercises. At end of the test period, both groups were reconditioned and on

the same level of physical fitness. Both groups had regained their normal bone alignment and metabolism with an appetite as before the project. From then on astronauts in orbit are assigned stress exercises on machines in order to prevent deterioration.

If the bones of men in full prime can deteriorate and be restored by passive exercises, the bone and muscle structure of *otherwise healthy* C.P. infants and children can be restored just the same by passive exercises. If the metabolism of healthy men can be stopped by inactivity and bed rest and be restored by passive exercises, then also the metabolism of these inactive little ones can be started by passive exercises.



¹Leach 1970 ² Naftchi 1980

WHAT IS CEREBRAL PALSY?

Cerebral Palsy is a manifestation of inability to move normally and showing a visual distortion of one or more limbs. No baby is born with such symptoms where such labeling would be justified. It manifests itself at the earliest between the 5th and the 9th month (this includes spastics and non spastics) and even then the physicians hesitate to apply this label. Most physicians¹ comfort the parents as long as they can with phrases like: "Your child is just slow in development, give it time."

Dr. Angeles Badell-Ribera¹ says the following:

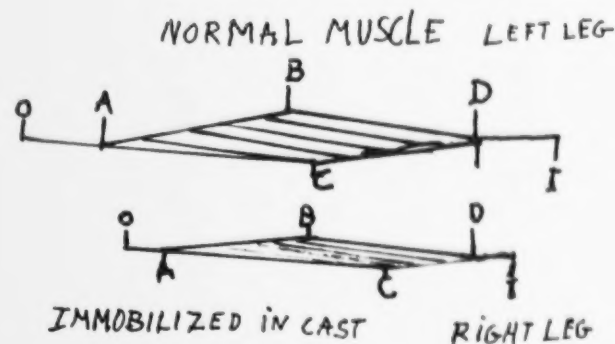
"Diagnosis of cerebral palsy may be suspected before the age of six months and can usually be confirmed before the age of one year. This diagnosis poses immediately the question of defining functional prognosis; in particular, the potential for postural-locomotor control. Good prognostic value is attributed to the acquisition of sitting balance before age two, as well as to the disappearance of the oblique quality of infantile reflexes."

In other words, the attitude toward cerebral palsy has not changed in 75 years. Many ways have been developed

¹ Badell-Ribera 1985 ² Cardena 1977

"cope" with cerebral palsy and equipment has been designed to facilitate handling, but by and large there has not been a break-through which is universally acceptable. There are many facilities which are helping the CP individual and the family to accept the handicap and teach them how to make the best of it. Added to this the fact that "taking care of the handicapped population" is a multimillion dollar business which does not tolerate interference.

The fact that parents are not told that they themselves can change their child's and their own lives, is to us a manifestation of *benign neglect*. When muscles are not used they shrink. The baby's muscles had normal tone and were fully developed at birth. From that day on he was not able to move. That is, from that day on his muscles began to shrink². (You know what it does to your muscles when they were 4 - 6 weeks in a cast!) The opposite goes for the nature of the bones of a newborn: they grow at a rate never to be repeated at any other period in life. The two phenomena, shrinking muscles and growing bones create an intolerable condition for the child by the 5th to 8th month which is uncalled-for and then labeled cerebral palsy.



HOW DOES LEARNING PROCEED?:

A baby that cannot move, cannot feel anything, therefore all movement handicapped are mentally delayed for lack of experience. The baby's first learning experiences are by sounds and by feeling. With his rooting instinct he nozzles his way to drink. He rubs his face, his hands, his knees and his body against the sheets, on mother's arm, he sucks on anything, including a nose. He feels hard and soft, hot and cold. Babies are said to never lie still, wiggling even in their sleep. This is nature — every time the baby moves, his muscles massage the bone and stimulate metabolism, that is, the transport of oxygen, iron, calcium etc necessary for normal growth. The bones need that to grow strong with a normal alignment.

As the studies show, however, it does not matter whether the person wiggles his hands, or other people, or a machine activates him. The body reacts just as readily to passive, involuntary mobilization. That is, the body is totally unselective, it cannot differentiate between self-induced activity or activity induced from the outside. In our case where normal functions of the brain are short circuited, the organism is not activated. Letting a child lie there

motionless, with no one to induce activities is benign neglect.

Learning without movement stimuli is not possible. For instance:

A ten year old lateral cerebral palsy child, bright, intelligent with a high IQ, excellent classwork, was asked to put the normal hand behind the back and identify some 10 objects put into her hand. She named them all: a cotton tail, a key, a button, a dime. When the same assortment was put into her affected hand she was unable to identify even one item. She had no feeling in that hand and no experience. Working with her in this program for just three months changed all of that; the handicap evaporated. Despite fast growth (from 5' to 5'8") her leg and her arm, and her hand, all developed feeling and became as relaxed and almost as functional as her normal left side. Seven months later, she enjoyed riding a bicycle, swimming, and a hike of one hour down hill.

Such a recovery would not have been possible if left up to her own devices. If she could have done it on her own, you can be certain, she would have done it long ago. Instead, she had to depend on her father and mother. She and her father rose every morning 40 min. earlier, that is, at 6 AM, so that he could exercise her leg and her arm (exactly the same as you will have to do), for one half hour before he had to get ready for his job. At 7:30 AM the girl received the same exercises from her mother (before the school bus). It took in all six weeks before she noticed that the range of her movements was increasing, whereupon she did all she could

on her own to expand that range at school, while on the school bus. With her left hand she pulled her right hand and massaged palm and fingers. The physician stopped talking about scoring the muscles. A year later, no one would have thought her to have a handicap, walking so straight and graceful. Like many people, she remained left handed, but who minds that!



BENIGN NEGLECT:

What parent would voluntarily opt
for such a distinction?

Once we understand that something can be done to get this little engine started, the battle is won. If you watch an average baby he makes many random movements and is above all single minded and persistent, trying over and over with the same motions. He is having his fun seemingly with the trivial. He winds his fingers around your finger and tries to hang on until his arms hurt and he cries, he has not learned to let go. Five seconds later he starts over.

Your child cannot do that, but you can wind his fingers around yours, you can hold his fingers in place, lifting him gently until his head is free of the pad, and return him down on his back. You can coo and laugh, and try it again.. Do it five times in a row. Don't pay attention to crooked arms, put a record on and do it with rhythm, repeat the song and soon your child on hearing the melody looks for it to happen.. Try it. It works for a baby of 4 months and for a child of 6 years. He won't come apart! Once you have tried it, you will get confidence and you will repeat it. Then there is no longer benign neglect.

Already after three weeks you will know that this is the right program for you. It will grow on you because you can see improvement and changes. For the average child it takes two months for each and every movement before he begins to use that limb on his own. Once that is apparent, he needs no urging, he begins to acquire coordination skills like any

other child. For now he knows he has a limb, which means, that an other part of his brain has picked up the sensations made by passive movements, and has come to expect and like the *feeling* of that particular limb/movement. The brain had to first learn about having a limb which can move before it can initiate the movement. Once the brain has registered this, the child can recall it and expand on the skill. Therefore it is not the execution of an exercise, which counts, but the fact that the brain realizes that there is a limb which can move! Never pay much attention to the movement itself. The thrill of seeing this happen is indescribable joy. However, hide your excitement. Draw your child's attention rather to butterflies, or to green blocks and sweet dolls. If he is old enough, roll dice and play parcheesi, guiding his hands. Normally we pay no attention to how our feet and hands and arms are to move. And now, too, there is the danger that movement itself becomes the goal and not mental growth. You can do it! You can reach for the teddy bear - "isn't he soft?" That is a learning experience which can be repeated and talked about: "Today, Peter has reached for his teddy bear!" On hearing that, your child will focus on the teddy bear with possessive pride. That is a learning experience worthy to be talked about. The emphasis in all cases is on fun and a tangible accomplishments! You don't teach a movement. You solely cue the system.

PARENTS' REPORT CARD

MEMORY IS VERY SHORT:
INCLUDED IS A CALENDAR AND A FORM TO FILL
OUT!

Before you start the program, measure the range of all the movements which your child has already and enter the measurements on the form, always include the date

- A) Keep track of the schedule of daily exercises, who did them, which ones, at what time and for how long.
- B) Each person is to write in a comment as to the child's attitude: grumpy, happy, wants more, wanted to quit, unhappy, cranky. One word is usually enough.
- C) Once a month take out the above the form and measure the range of movements now. Note down the difference and add the new date

An accomplishment is something which he is repeating all by himself when on his own. There is no performing, or prodding to repeat a movement. If you see him stretching out his hand, hold two objects, one in each hand accessible and let him decide which one he wants, a flower, a glass of orange juice, a toy. Make a fuss over the object he chooses. After three months of exercises a little boy of eight wanted to feel his mother's face and hair for the first time! Don't attempt performing; there is great danger of overstimulation. He should rejoice in getting his way. You don't want to raise anxiety and fear of failure, or stage fright. Parents, if you are apprehensive he will sense it. If you catch him doing something make him feel like a million dollars but don't insist on a repeat. Give his newly found

action a target like hugging a doll. The most important thing is to make him secure in your love. Don't act disappointed when signals get crossed. For instance, a six year old was taught to go down on her knees. All the signals got crossed. Now, every time she felt the floor under her feet she went into the knee bend and did not want to stand up at all. Don't give up! That will pass, every baby goes through such a phase. Coordination is learned only by trial and error, normal to every baby. Don't let it bother you that your child is chronologically older. Age means nothing. But these steps simply cannot be skipped. At least, you see that something logical is happening!

IMPORTANT

PARENTS, TRY OUT ALL EXERCISES ON EACH OTHER FIRST!

These exercises are written for a one-year-old to an eight-year-old. (For infants under one year of age write for the infant program.) Exercises I through VI are arm exercises and are to be done on alternate days, changed off with the leg exercises, giving arms and legs twenty four hours of rest between the passive exercises.

Exercises B and C are to be used every time you have to transport your child from one place to the other, to the car, to the bathroom, to the kitchen to the bedroom. Exercise B will convey the thud-thud of your footfall to your child. C

playfully pretends to take the weight off your hands, letting him feel some of his weight, and his feet on the floor.

If you like to run don't hesitate to take your child and run around the block (2 - 5 min.). Two to five minutes does as much for your child, as for a beginner in jogging and is equally as strenuous. Letting him feel your heart beat and breathing hard, your ribs against his, is very beneficial for it conveys the shock under your heels to your child. (Don't hurt yourself, watch his weight. Don't overdo it. You should not attempt it with a heavy child.)

Never leave your child prone on his back. Always put him on his stomach, even if he turns himself.

Exercise A is a bathing exercise, which should be done every evening.



RELAXERCISE

BEFORE BEDTIME.

1) Fill tub about 1/4 full with comfortably warm water. Test it with your elbow. Put your child into the tub. While supporting his head, add good warm water, agitating with free hand until the water is good and warm. Turn off.

2) Take mild bath soap and let your hand slip on the long bones of his arms and legs as if squeezing sausages — it is fun and it feels funny. (Don't let water get cool, add hot water while agitating).

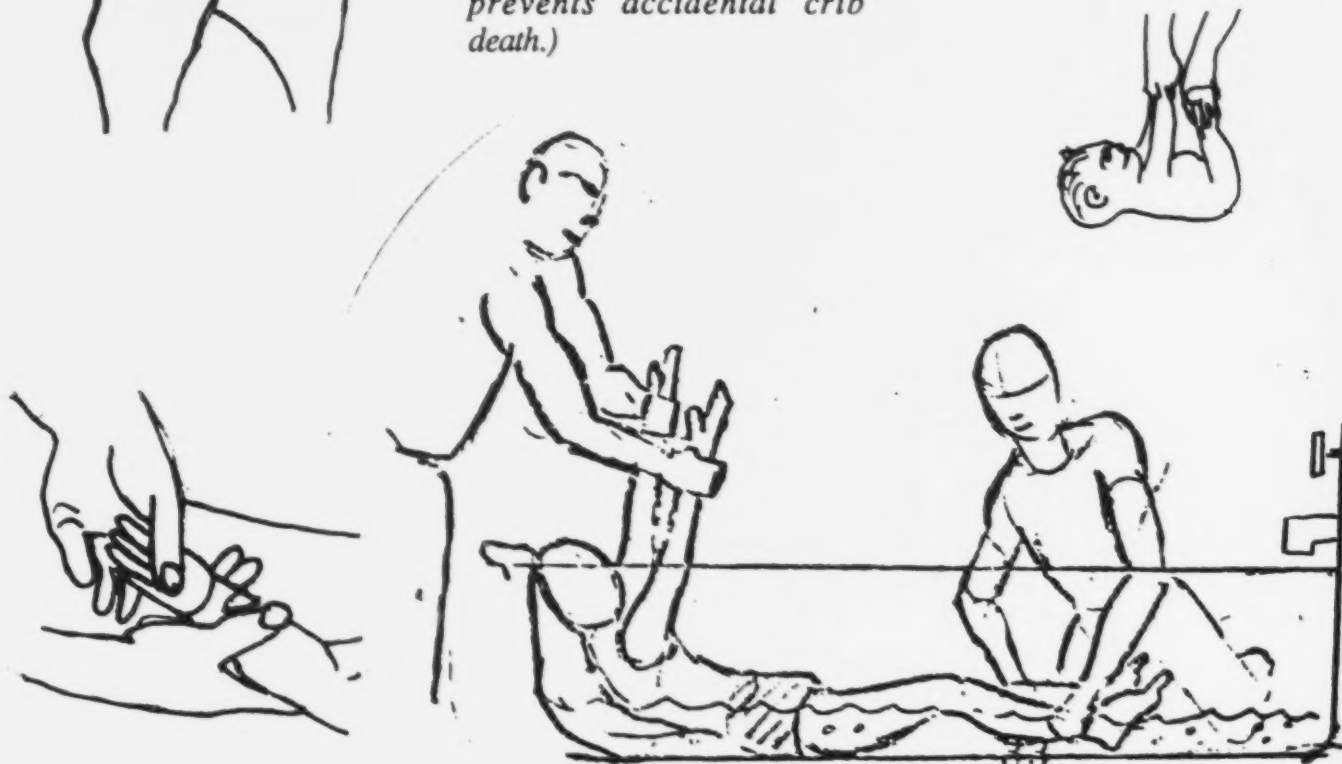
3) With firm pressure feel over all the bones in his body, the ribs, face up, including his face; do the same face down (not in the water!) on your arm. Rub his back from the nape to the stern. Include his fingers and toes.



4 Have a plastic pitcher on hand filled with cold tap water. Take him sort of upright out of the good warm water and give him a cold douche all at once, head shoulders and pantomime: "brr, how awful!"

(This is an excellent exercise for strengthening the heart. It stimulates deep breathing, and as an added benefit, it prevents accidental crib death.)

5 Put your child momentarily back down and then lift him out of the tub by his hands and by his feet. Being completely relaxed, his own weight stretching his limbs this way will not cause distress. With an older child (4 - 8 years), two people ought to take him out with a loving swing to a towel on a firm surface, such as a floor or table.



6 Dry him. Now remember what you just did with the soap in the water? Well, you do exactly the same this time using baby oil or his favorite lotion, the cheapest will do. You put it on his arms and legs, one at a time and squeezing it like a sausage and having fun.

7 Next you rub his ribs, always communicate and tell him what you are rubbing,

count his ribs and ask him whether he can feel it. Turn him on the stomach and rub down his back from the base of the head to the buttocks, giving them a generous massage.

8 Don't forget to lotion his face: "That is your forehead, this is your nose, this is your right cheekbone, this is your left one, this is your upper chin and this your lower. And now we are done."

Blow a bubble kiss on his belly button and dress him comfortably, put on pajamas, diapers, for the night, dress differently from daytime.

9 Again carry him by his hands and feet. Carefully let him take over holding his head, his feet a little higher. "Here we go!": head first down on the bed in a comfortable position. Now you turn him over on his stomach.

Each time you put him to sleep, let him face the opposite side from before. Make sure his hands are in crawling position right and left. Cover him well.

10 Don't use much of a pillow so there is no chance he could suffocate. Should he move, changing his position on his own, that is fine. No comments, kiss him good night, turn the lights out or very low. Pull the curtains and tip-toe out of the room. Don't sit outside at his door. Finish up in the kitchen.

11 Before you go to bed, change the diapers, use little light and no talking. Turn the face to the opposite side from where you found it. Close the door firmly.



THE MAIN CARRYING HOLD

In order to feel the thud of the heels of a person walking, hold your child either with your hands or with your arms below the ribcage. Press his chest against yours with his head resting on your shoulder. His hands are dangling loosely over your arms and his feet are dangling. Walk briskly.

If one of you is a jogger, you can take him around the block. It will do your child good to feel your breath and the beating of your heart.

Use this hold, whenever you wish to transfer him from one place to another, from the kitchen to the bathroom, to the car, to the bedroom. It is less cumbersome than draping him over your arms. Never carry more weight than advisable. Consider your health first.



B. SHOULDER LIFT

This is a very natural lift that parents use before a baby can walk. They let the baby get a feeling of his feet on their lap or on the floor without expecting him to bear his weight. Now you do the same. At three years of age or over it is easiest done between two people.

Hold him under the arm pits and lift and let him drop to the floor, but not long enough so he buckles under. You can "walk" him like this by swinging his legs. It is important that he has shoes on. Count one - two when lifting him up and three - four for coming down.

Have him face you for a stationary exercise, or face in the same direction as you, when you need to get him upstairs or across the room in a hurry.



If he has trouble holding his head procure a neck collar*. Let him wear it for eating and for short periods only, for instance, while making some of these exercises. It is to prevent overstretching of his neck muscles.

Use this mode of transportation rather than draping him over both of your arms, or carrying him in a caddy.



CHAPTER I

ARM EXERCISES I - VI

These exercises are to be done every other day and should not take more than one half hour. They are to be repeated in all 4 times each day.

Before you begin with these exercises do them first on each other, and that in full view of your little one. It is not to pull and push or hurt. Let him see your smiling faces.

Procure some records or tapes with nursery songs and rhymes, even country western will do. Turn the volume pleasantly *low* so that your singing is louder. Do the exercises to the rhythm, creating an atmosphere you (parents) can enjoy.

When the exercise says: *Lift the hands up*, and the child's hands and arms are crooked, don't be disturbed. You are not to force them straight, and you are not to yank him out of a comfortable basic position.



As soon as you feel resistance that is it. A little resistance is healthy and it is your cue to stop and go no further in that direction.

Since each person has his own way of doing the exercises it is better when more than two people take turns. You have nothing in particular to watch. There is no one to be copied, nor precedent to be set. Each person can interpret the exercises in his own way then and there, entertaining the tot!

You are not teaching the little one anything except the songs. He does not know how to move. In fact, he does not even know that he has legs and arms. How can you try to teach him moving them? Forget about teaching, have fun in doing and singing the songs.

For all six of these exercises seat yourself comfortably on a bench, on the floor, wherever you can control the child's legs, seating him on a *solid* surface.

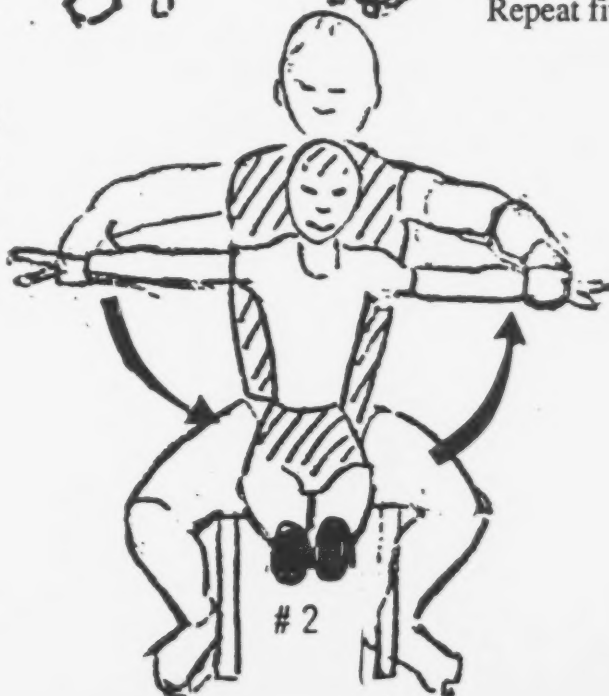
I. ARM EXERCISE

Seat yourself with your child preferably on the floor, your chest steadying his back and his feet closed as good as possible without forcing, his arms hanging down.

1 Take a hold of his arms and bring them up horizontally (*don't force the shoulder up - just do it half way at the beginning - only up to feeling resistance.*) Count in waltz tempo, one - two - three up.

2 Swing back to original position, count one - two - three down. (*It works just as well on a nursery rhyme, or counting one - two - three - four*)

Repeat this five times.

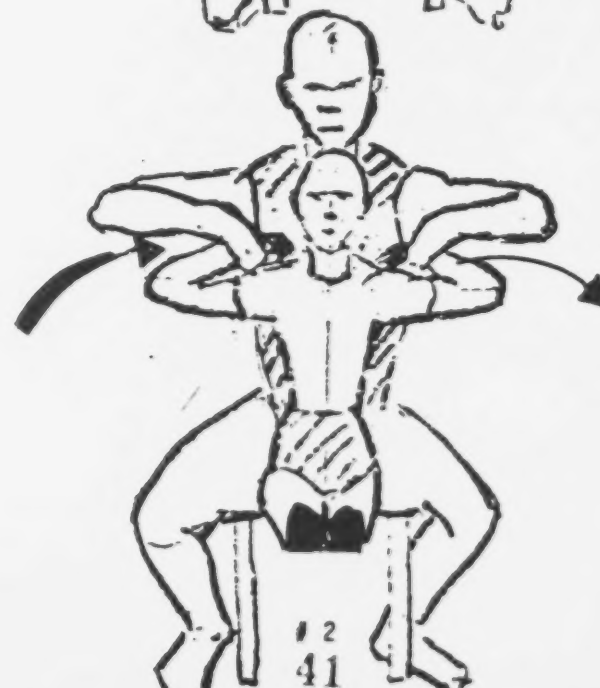
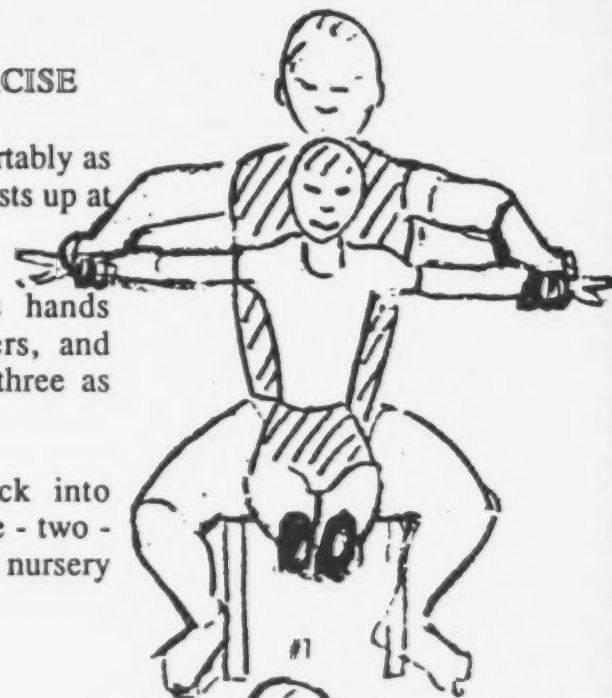


II. ARM EXERCISE

Be seated comfortably as before. Hold his wrists up at his shoulder height.

1 Now move his hands toward his shoulders, and count one - two - three as before.

2 Bring them back into holding position, one - two - three, to a tune of a nursery rhyme. Have fun! Repeat five times.



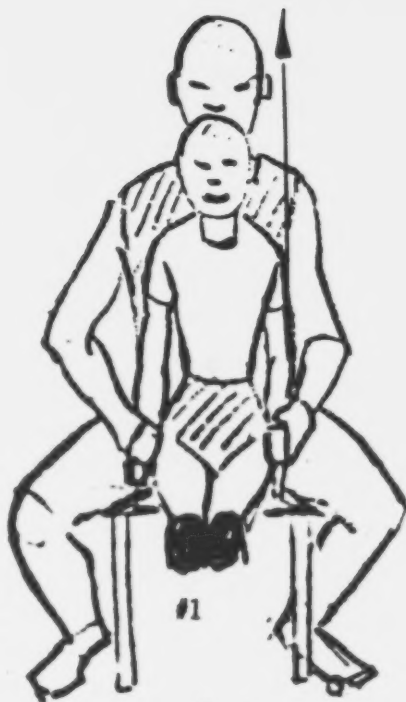
III. ARM EXERCISE

Be seated comfortably as before: Arms hanging down in resting position.

1 Lift the hands quite parallel in front to overhead (all the birdies fly high).

2 Bring the hands down the same way (All the piggies stay on the ground.) Count one - two - three - four. Repeat the exercise 5 times.

(Arms may be angled, as long as they are as straight as they can get without undue strain -- don't lift higher than enjoyable.)



42

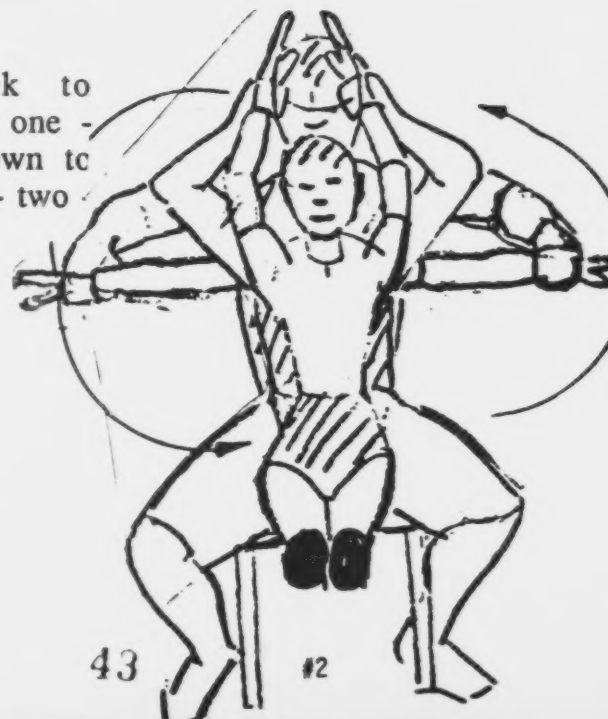
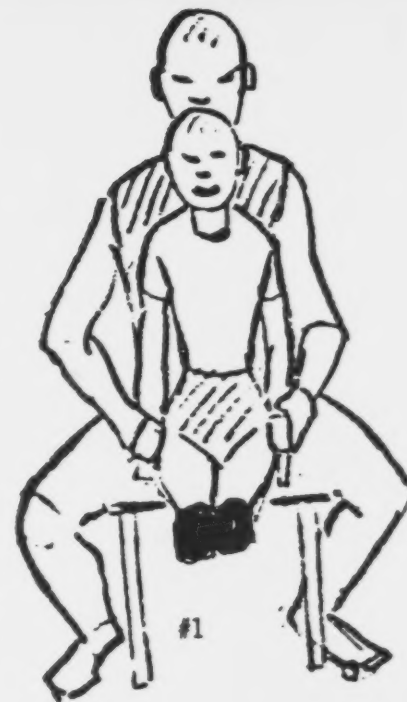
IV. ARM EXERCISE

Be seated comfortably as before. This is the butterfly sweep. Keep pleasant tension; don't go further than he can enjoy.

1 Hands are in resting position. Take hands and sweep horizontal to his shoulder level and bring them to overhead. Count one - two - three to horizontal. Count one - two - three to overhead.

2 Go right back to horizontal, counting one - two - three and down to resting position, one - two - three.

Repeat 5 times.



43

V. ARM EXERCISE

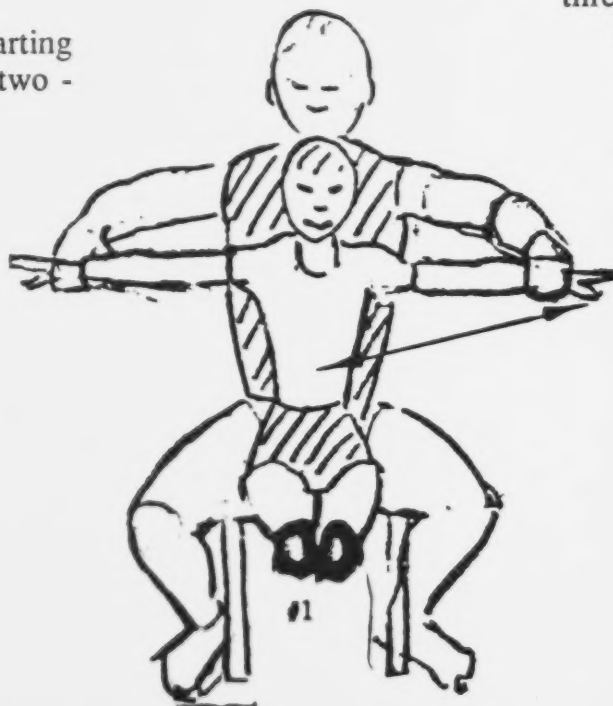
Be seated comfortably as before. Spread both arms horizontally. This is a double exercise. You hold his arms by the wrist, however use your fingers to hold:

A. his palm horizontally, palms down.

1 Now you sweep across so that the thumbs touch. Count one - two - three.

2 Sweep back into starting position. Count one - two - three.

Repeat 5 times.



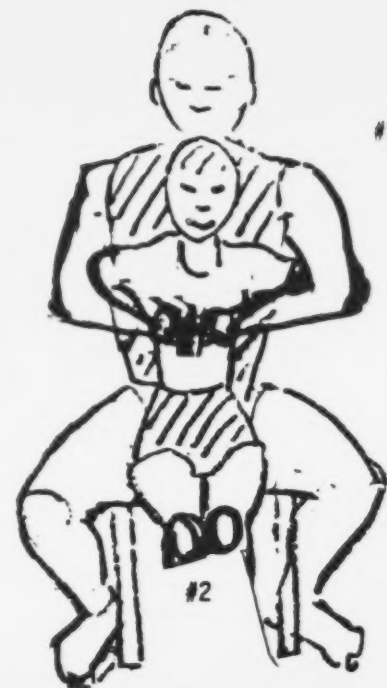
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B. Hold his palms facing each other.

1 Sweep across with pleasant tension until hands touch (Don't try to clap, if his fingers stray everywhere, his elbows as straight as they will go.) Count one - two - three. Rhythm and songs are important, that is what you are teaching him.

2 Sweep back into starting position. Count one - two - three.

Repeat 5 times.



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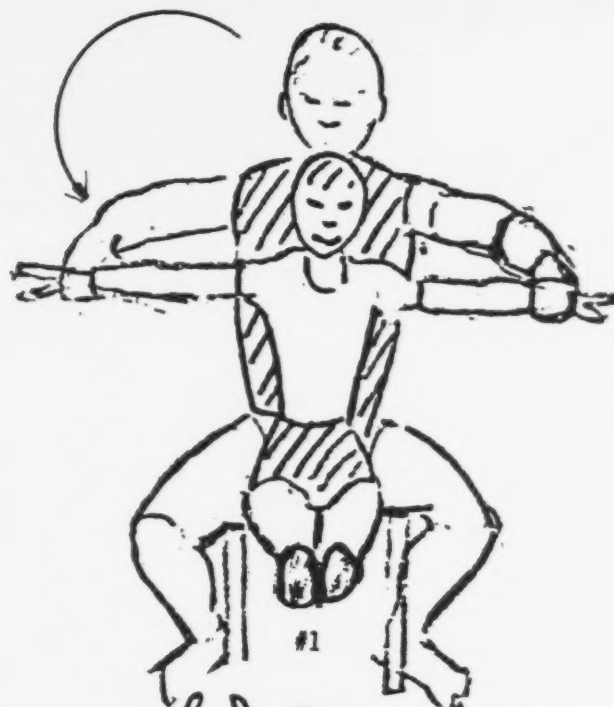
VI. ARM EXERCISE

Be seated as before. Spread arms with his palms facing to the floor, maintain pleasant tension throughout.

1 Swing his little arms in butterfly motion overhead, his palms facing and gently touching. Count one - two - three - four.

2 Bring hands back to horizontal, palms facing down, count one - two - three - four. Repeat 5 times.

This exercise involves turning the wrist, hands and arms 90 to 180 degrees. Your hands and arms will do the exercise automatically. Since you always maintain slight tension your little one's will follow right along and will find it enjoyable. Concentrate on the songs!



#1



#2

THIS IS THE END OF THE BASIC ARM EXERCISES

Do these exercises 4 times a day and skip the next one, when you will be doing the leg exercises. Already after the third day, feel his upper arms and you will notice a strange warmth of his muscles. That is what is essential for getting the little engine started.

Now that you have read the first day's exercises, you must not forget to demonstrate them to your little one, by doing it on each other first, mother on father, and father on mother.

Don't expect miracles after one day. If you have a muscle ache, simply expect that your child too, has a muscle ache. Neither forget that each child has its own speed of learning. In general, you must count on an average of two months before he is beginning to reach out and move on his own. This means, he is completely depending on your sticking it out doing the above exercises four times every other day for two months.

STOP THE USE OF DRUGS I

Tenderizers and drugs are used to relax the tension of the muscles. This is just the opposite of what your labor is trying to accomplish. Many CP children are on drugs, in general, for no valid reason other than that the physician is at a loss of what to do and wants the parents off his neck.

If your child is not healthy and needs drugs, than this program is not for your child. But if, after a good physical, your child is declared otherwise healthy, but was already on drugs for a year or so, have a trained physician wean him of all the drugs as soon as possible (don't do it on your own, but it is important for the final outcome that he is free of drugs.)

One year on valium or similar drugs makes your child an habitual drug addict. It does affects his brain. (Just because your child cannot move, does not mean he has no brains left. Only a tiny part is destroyed, with the majority left intact. A rotten deal to get fried because of unnecessary drugs!) Drugs defeat the purpose of your efforts.

If your child is **spastic**, don't despair. For a happy ending, spasticity is not a difficult handicap to overcome. Before starting, read the instructions on how to do the *exercises with a spastic* child. The outcome is just as bright, if not faster. All the same, you have to phase out the drugs as fast as you can, because drugs destroy the parts of the brain which are still untouched, that is, most of it!

With eating better and with the exercises your child will automatically sleep better. Be mindful to create the environment for night/day. Use the carry holds when moving him and bathe him every evening.

FOOD INTAKE

The average CP child is everything but a great eater. Up to now he had no need for a metabolism to maintain an active body. He was taking in just enough to maintain his existence, that is, no more than vegetating.

By the end of the third week of exercising, you will notice a slight bulge on his upper arms and in his legs with a raised temperature. This means that his body is signaling, screaming, for oxygen, minerals, starches and proteins as never before. From now on in his metabolism is activated. You will notice that he is beginning to eat anything you may offer him. His appetite for food is increasing by leaps and bounds

Say good-bye to all the baby foods and feed him from the table, vegetables, fruits such as pears, peaches, bananas, applesauce, and all kinds of meat (mashed with fork, or for meat, put through a blender.) His food should be spiced pleasantly but not heavily and his meat not be cooked with tenderizers!

LEG AND BACK EXERCISES VII - XII

Do these exercises every other day, on days when you don't exercise the arms. Each child has its own pace of learning. In general it takes the patience of doing them for two months before something happens and your child begins to move. But then your child can use *only* the muscles which were exercised, because they alone have experience, even though passive.

Strength and ability to use hands and legs functionally comes only through his own practice. That is when he acquires coordination. But he cannot do that until his little engine is started. All you do is the starting. The only way you can start it is by moving his limbs, and a specific movement does not make the least bit of a difference.

Therefore none of the exercises are a goal by them-



selves! You don't teach walking! When you go to the bathroom you don't think what your feet are to do. You miss your feet only when they do not function.

Parents, you are solely responsible to teach your child fun, to keep a rhythm and to recognize nursery rhymes. It does not matter whether he is verbal or non-verbal; this will not be lost on him, you will see.

As before, try all exercises on each other so that your child knows what is coming — also do them to the limit of your toleration, so you will know when fun stops. Remember, active children can be rough. Really nothing happens, but other parts of the body start shifting in order to compensate and accommodate the new taxation. That is your cue to stop.

VII LEG EXERCISE

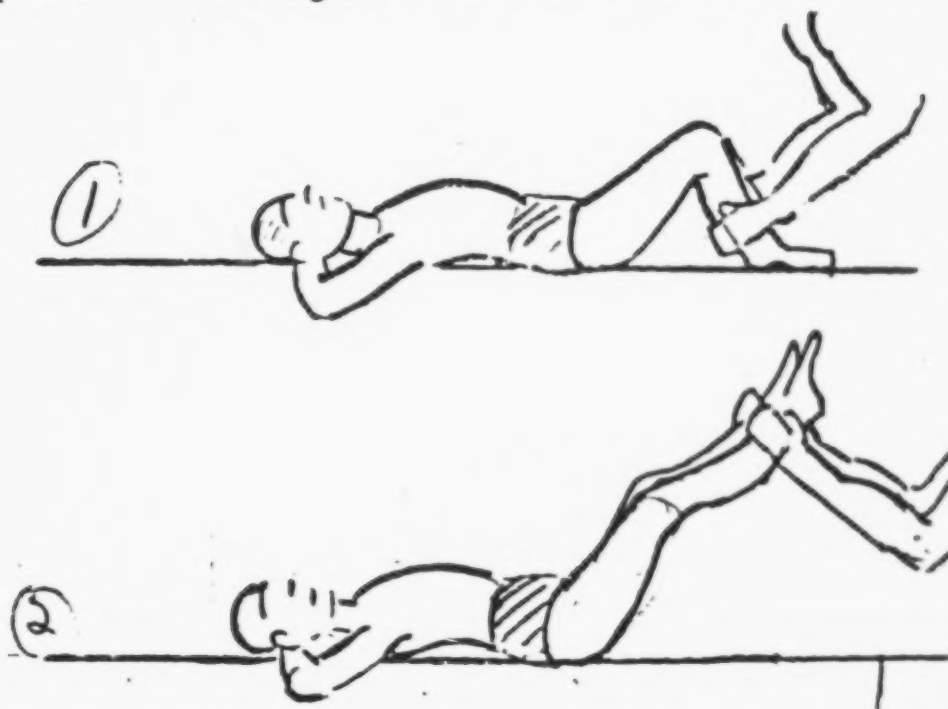
Place your child's hands with open palms under his neck. If that does not work put arms in relaxed angle with hands above shoulder; if nothing else put a cushion on each elbow and pay no attention to arms' doings.

1 Take a hold of the legs at the ankles. Pull outward and upward without moving the

trunk or the shoulders. Count one - two - three up and

2 one - two - three down. Repeat 5 times.

(Actually, you can pull your little one anywhere across the rug. Especially, when you have older children, get them into the act and let them pull him around, just make sure that he does not get hurt.)



VIII LEG & BACK EXERCISE

Position as before.

1 Lift feet at a convenient angle (if not right angle) with buttocks in weight bearing position on floor.

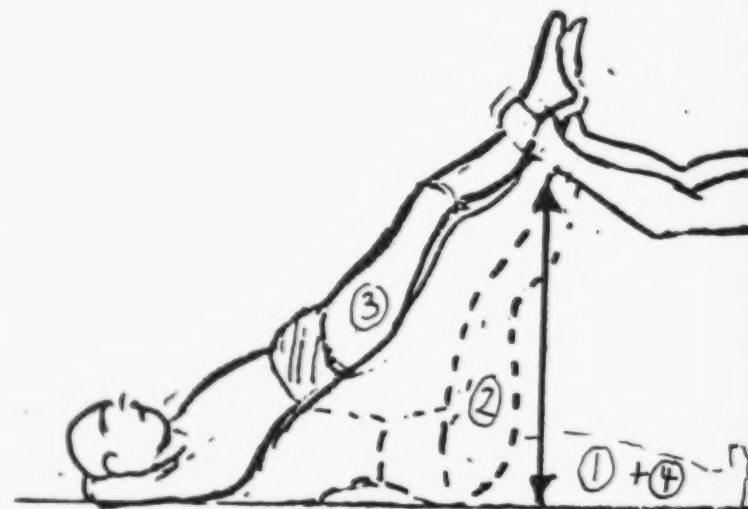
2 Shift weight to shoulder counting one - two - three (not moving the head or

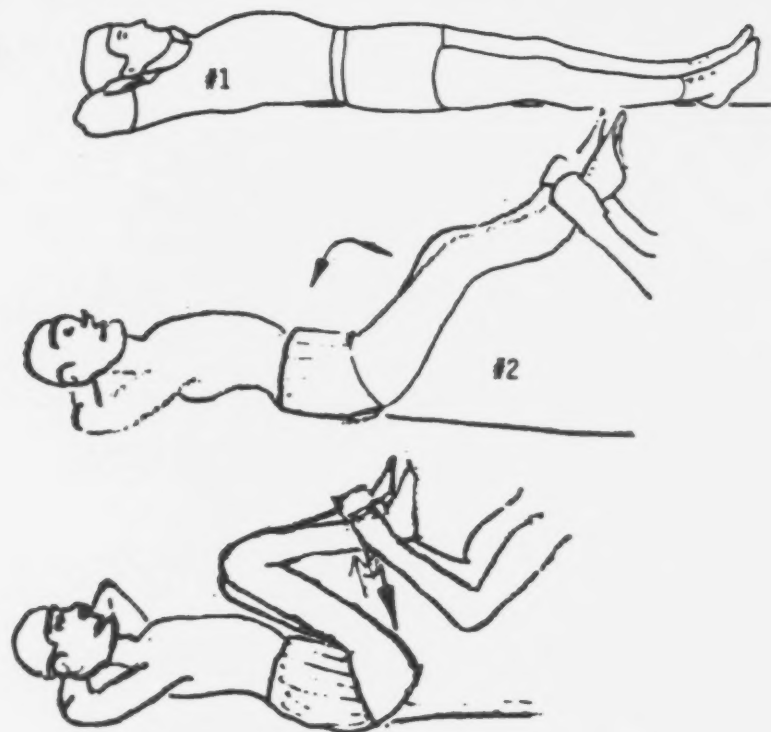
arms; no harm, though, if they do move). Do it to a tune.

3 Return buttocks to floor, one - two - three. Rock weight from pelvis to shoulder.

Repeat five times.

4 Return feet to the floor. Counting one - two - three. Start from the beginning — Repeat five times.





IX LEG & BACK EXERCISES

Put arms in resting position as before.

1 Lift feet with traction, counting one - two - three.

2 Push knees downward to the chest, one - two - three.

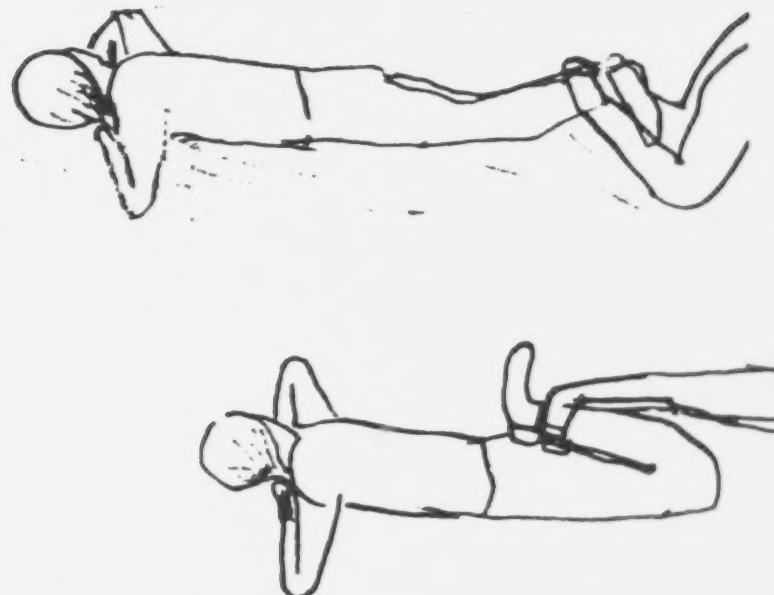
3 Rock heels in direction of buttocks, one and, two and, three and, four and, five and.

4 Lift feet up straight, one - two - three.

5 Lay down in starting position, one - two - three.

Start from the beginning.

Do the set 5 times.



X. LEG EXERCISES

Put your little one on the stomach, hands palm down on the floor above shoulder.

1 Take his legs by the ankles and bring his heels toward the buttocks, firm, apply no undo pressure.

2 Now rock the heels downward in brief blasts, counting one and, two and, three and, four and, five and. Do it gently and avoid hurting. You find out quickly where fun ends. This stretches the stomach muscles from the shoulder to toes

3 Put legs back into starting position. Counting one - two - three. Repeat that 5 times.

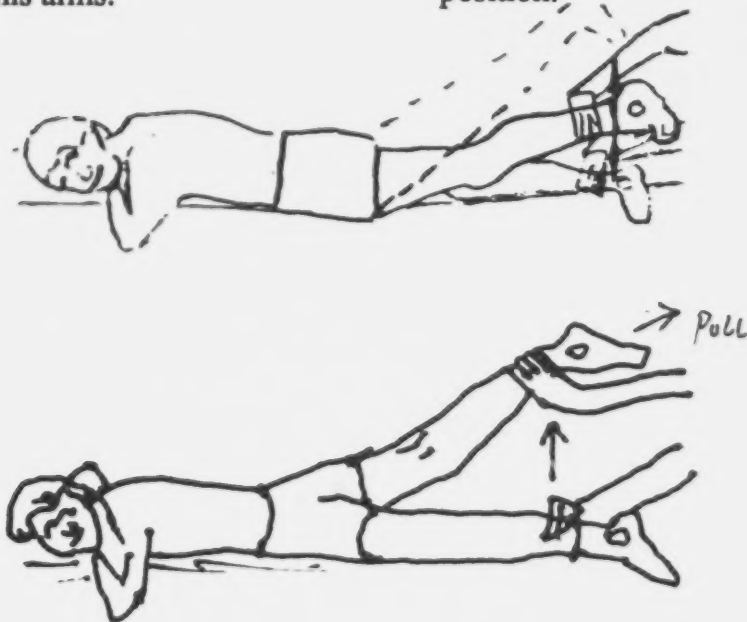
XI LEG EXERCISE

Still on the stomach as before, hands palm down under his neck, or with cushions on his elbows. This position is not exactly comfortable, since it stretches the shoulder muscles. This cannot be avoided because it is an essential step for crawling and lifting himself. In the beginning, don't pay much attention to what he does with his arms.

Stretch out his legs, and listen to the music:

1 Hold one leg in place at the ankle, while you pick up the other leg at the ankle, lifting the other upward with outward traction, counting one - two.

2 Still with outward traction you count one - two; and put the leg back to resting position.



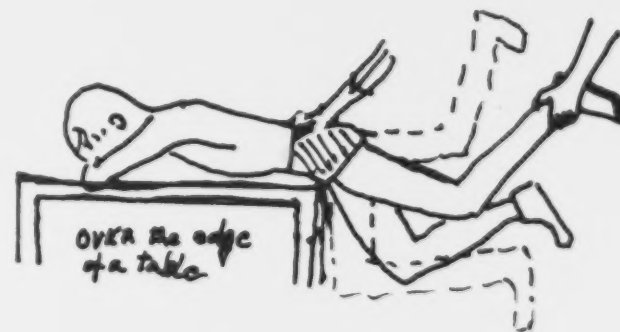
3 Hold down the other leg at the ankle (notwithstanding the angle of his knees, to be sure!) Count one - two and pull the other leg with traction away from the shoulder, lifting it until you feel resistance.

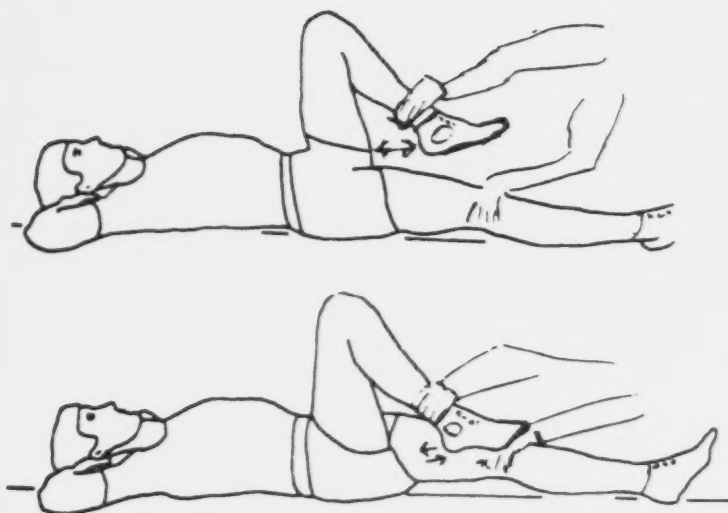
4 Count one - two and put down again in resting position.

Do that five times.

This is a very difficult exercise and in the beginning it may seem to you that you are getting no-where. Even that is worth doing. You will find that before three weeks are up, you manage very well.

It is part of our walk-ing step, it looks very simple, but it is quite a challenge, so don't hold down too hard, and don't lift so high that it hurts. Be satisfied to get the one leg just a couple of inches off the original position without moving the whole child.





XII LEG EXERCISE

Turn on his back with hands, palm up under his neck, as before.

This exercise needs also developing. Place one hand lightly on the knee of the left leg, don't attempt to flatten it.

1. Take the right leg firmly at the ankle and bring it back to the buttock.

2 Rock the heel down toward to the buttock and release as quickly, don't hurt the knee or the hip. Rock five times.

3 Then stretch the leg out with tension and return to starting position.

4 Hold down the knee of the right leg, (not to hurt!). Take a hold of the left leg at the ankle and push the heel to the buttock.



5 Rock the heel back-ward in 5 short blasts and release without hurting.

Do that 5 times.

6 Return the leg into resting position. Change feet. Do the exercise with music, have fun!

Repeat 5 times.

Do arm and leg exercises on alternating days. Do that until he can do them

on his own, then go on to the next set. Don't rush, take your time. Your pledge: a half hour, four¹ times each day for a year.

Once you have time left, introduce an other exercise. Don't do more than 30 minutes four times a day. When he reacts use it with resistance, like wrestling.

Remember, like any beginning athlete, he has to train his body to become an expert. Like him he needs 24 hours to unwind to let his sore muscles heal.

Of course there is a great difference between exercises and play. Don't let this stop other activities, be it play, school, or Kindergarten. If he has a schedule, stick to it — have fun!

IFeigenson 1977

CHAPTER II

QUESTION I:

WHY IS THE MAXI-MOVE PROGRAM AN AEROBIC FITNESS PROGRAM?

Energy for movement depends upon an chemical reactions, burning fuel, such as sugar, starches and fat. Basically there are two kinds of energy-releasing chemical reactions occurring within the muscles. One reaction is the burning of sugar and fat by combining it with oxygen. This is called aerobic metabolism. That process made possible by this type of chemistry is known as aerobic work. The total amount of energy which can be produced by aerobic metabolism is quite great, though the speed by which this energy can be spent is quite limited. Only tiny amounts of fuel are stored in the muscles at any one time. All of it comes from other tissues, such as the liver which provides glucose (sugar), and from adipose tissues, which provide the fatty acids. All the foods must be transported to the muscle by the blood. To perform well it does not depend on the size of the muscles, but on the richness of the blood supplied, and that depends on the degree of efficiency of the heart and the lungs in delivering the necessary oxygen and fuel.

There is an other source of energy produced and stored in the muscle which is released by chemical reaction and called anaerobic metabolism. This reaction utilizes glycogen, a complex sugar compound auto-matically stored in a healthy muscle. This energy fuel does not depend upon the availability of oxygen¹. In sudden strenuous tasks, like fleeing from an intruder, or finishing in a marathon race, this energy is released when the aerobic process is not sufficient. But once the muscle's resources are fully depleted, the person is utterly exhausted, requiring a long time to recover. It is important to remember that CP involved have no such back drop because they have never built up and stored an anaerobic reserve. This is one of the reason why you are not advised to exercise your little one more than a half an hour at a session, leaving at least one hour between exercises with a longer rest following.

There is nothing the MAXI-MOVE PROGRAM can do to affect the anaerobic metabolism. However, as the muscles acquire muscle tone (becoming visible), reserves of this energy are gradually built up and stored in the muscle.

¹Danoff 1982

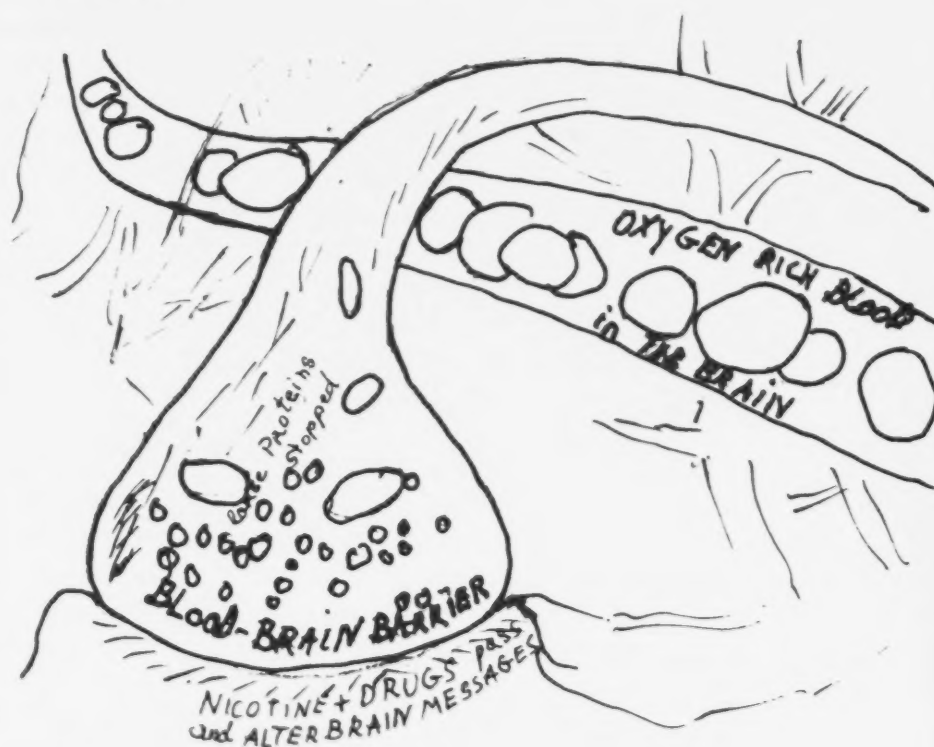
THE ROLE OF OXYGEN

The MAXI-MOVE PROGRAM hinges on the aerobic metabolism and its development. The mainstay of the program is to get the transport started to fill the new food requirements of the muscles. Of this the amount of OXYGEN transported by the blood is of single and foremost importance. The body has a hierarchial system when it comes to supplying blood to the body. #1 priority is to supply the circuit serving the brain. This has been demonstrated on swimmers. From the moment they put their face into the water, the blood pumped by the heart is averted from reaching the legs and arms. #2 priority keeps the vital organs supplied with blood. Only on #3rd and #4th place is the blood is pumped through the circuit which supplies the arms and the legs. Therefore, in the winter, your head feels hot, and your body feel toasty warm, while your hands and your feet are turning blue. In CP children these circuits are not yet turned on.

These two latter circuits are the ones you are trying to get started. The blood's transport of OXYGEN is the most important objective of this program. Blood takes nourishment from everywhere in the body, but it picks up the OXYGEN in the lungs. At the same time, the blood carries nourishment to every part in the body as needed, including OXYGEN, but only to ACTIVE MUSCLES, inactive muscles don't need it.

Nerves cannot function without OXYGEN. Nerves, as you well know, run throughout our body — just drop a hammer on the toe, or catch the finger in a door. — But

when there is no need for OXYGEN, when the system is shut down, there is no feeling, and it looks like there are no nerves either. The need for OXYGEN is supplied only by demand of the muscles. That demand is created by limbs moving. The body system does not care who moves the limb. If CP children could move, they would have done so long ago.

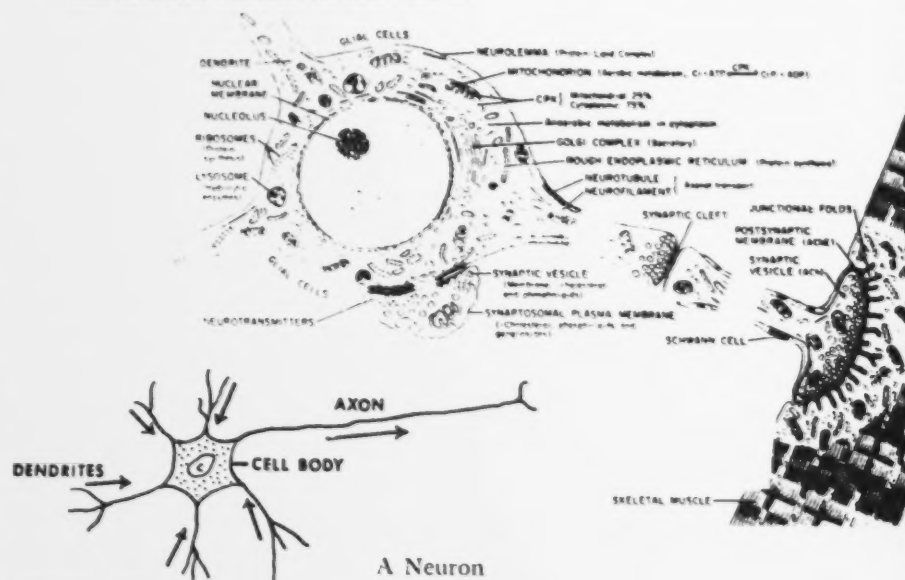


NERVES

Once the blood has turned on the aerobic cycle, OXYGEN in increasing amounts begins to circulate all through the body, including the brain. To function properly, the nerves, like lightening use up considerable amounts of OXYGEN. In these bursts of sparks, a chain of nerve cells are awakened and activated. There is an argument where nerves originate, in the brain? In the extremities? Luckily for our program, these chains of nerve cells take their beginning among others at those points where the capillary interchange is greatest, in the limbs you just activated, in the muscles, in the arms and legs, the hands and feet. The first signs are an increase in feeling sensations everywhere in the body. Your little one has a new awareness that he has arms and legs, hands and feet, and that they can be moved.

Once this feeling sensation has been manifested, and it is a happy experience, repeated regularly (4 times a day) the nerve chain passes on the impressions to the brain like burning it with a laser beam. The brain has a huge capacity, these signals go to a new part of the brain, no telling where. The original area is and remains destroyed. In Copenhagen, Denmark, they took encephalograms from fully rehabilitated CP who did what anyone could hope to accomplish on a completely normal basis. The scientists were totally amazed. Their brain worked only in the periphery in a narrow band right under the skull, while the middle seemingly was inactive. And here you had normal physicians, lawyers, teachers, students, while their brain did not conform to the norm at all.

You don't train a brain any way.¹ You learn, and the more you learn the better the learning. But your limbs learn totally independent from your mental thinking process. That is why physical therapists don't succeed as they would like to. They show the person how to do it and try to put the patient's whole will behind a movement. They become frustrated and give the child a stage fright because he cannot perform. Then there is the burn out. No, you cannot repeat that mistake, you cannot train your child to move his legs by demonstrating to him how to do it. It is your obligation to move his affected limbs as correctly as you can, while you teach him other things. The limbs learn when being moved. They are training and pass this on via the nerves chains to the brain.



¹Restak p.88/9

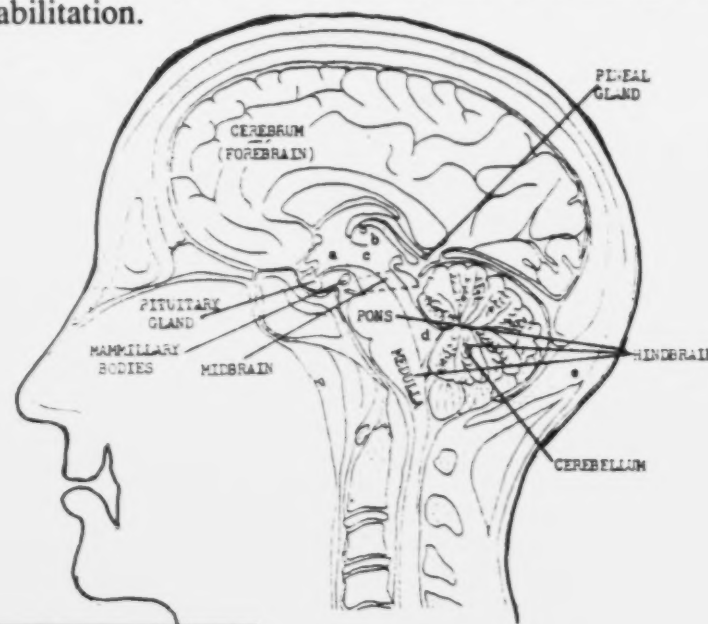
The brain has a huge capacity with only a minor part developed, taking the brain of even the brightest and most learned of any age. When your little one had the disaster only the seat of immediate action, like moving and/or crying were involved, that is, only the place where nature needed the special supply of oxygen. When that did not come forth, the body tried to overcompensate forcing an unusual amount of blood to the region, causing the rupture of capillaries there. The other regions of the brain were not affected. Intelligence has nothing to do with those regions.

Once the aerobic exercises are in progress and have started the aerobic cycling of the blood accommodating the muscles, other parts of the brain are bombarded by the nerve-sparks set in motion. Feeling is the first step and, eventually there is a recognition of the brain and a coordination between wanting and doing. As with the GIs in bed for 9 months, as soon as activation truly began their body rose to the challenge.

How long does it take? Our experience has taught that it takes one year. In some cases, seven months are fully sufficient, other parents needed to help on into the second year. Much depends also on your ambition for your child. One mother would not accept that her son was handicapped. When she got him to his feet and on his own, he was two years old, leaving no traces behind. It is difficult to predict how long it will take, since each child and each parent is different. One child may get a movement in one week of exercising, while another needs three months. Considering that there

are so many specialized muscles to activate, it is a complex situation, impossible to cover in much less than a year.

Nerves in man restore themselves¹. A leg cut off and immediately reconnected, the surgeon has no choice. He cannot avoid scar tissue through and through. Once healed they massage the foot and put weight on it. It is numb but before the end of the year, little by little, feeling and movement comes back. One year is enough time with exercise massages and therapy for the nerves to link up to the brain despite the most freakish obstructions. Scientists today know about this fact, but they don't know just how nature manages to repair the flow of nerves. Man has not yet found a way to manipulating and controlling nerve rehabilitation.



¹ Ladd 1982

If your child has been operated on to lengthen a limb, it has weakened ligaments and often the muscle itself has been relocated. That equals to having sprained an elbow or knee. Normally very painful. Secondly, the ligament is overstretched in the operation. Operations create a negative altered situation², which can ruin all hopes for normal development. Often an atrophied muscle is put into a cast for four more weeks to atrophy further. When it is finally activated, it is an up hill battle. If they had first spent that equivalent time for activation before they operated, they would have found that an operation was not necessary in the first place. Nature cannot be fooled with.

The MAXI-MOVE PROGRAM is not interested in the HOW the body manages to rehabilitate itself, but it is systematically aware of the pragmatic influence, which the program has on the whole body. First the shoulders and the hips have to be developed before attention is paid to the elbows and hands, knees and feet. The hands and feet are not neglected. You have to realize that touching is a major part of the program. Therefore the bath and the rubs, are a basic part to loving and to stimulating blood circulation which keeps on working at night while you are sleeping.

Sleeping on a hard surface also stimulates the feelings by contact. It requires shifting the weight of the body unconsciously. Lying on the stomach assists in accomplishing those shifts when the "feelings" of muscles being squashed begin to protest. On his back, your child is as helpless and as prone as a turtle on the back. Seat

² Pettit 1976

yourself in a beanbag, what can you do without muscles? Please try it. Then lie on a hard surface on your stomach, you will see that here you have a number of options, even though with effort.

Every movement your little one executes by himself is a step toward building an anaerobic reserve. When your child stiffens and is mad he used up those anaerobic reserves. By activating his limbs his muscles begin to store up that reserve. Once your child can challenge you with resistance, you have to work harder, but you also know that the end is coming closer. Even the tiniest resistance should be hailed with enthusiasm for it will speed independence. The parents of spastic children work almost all the time against resistance.



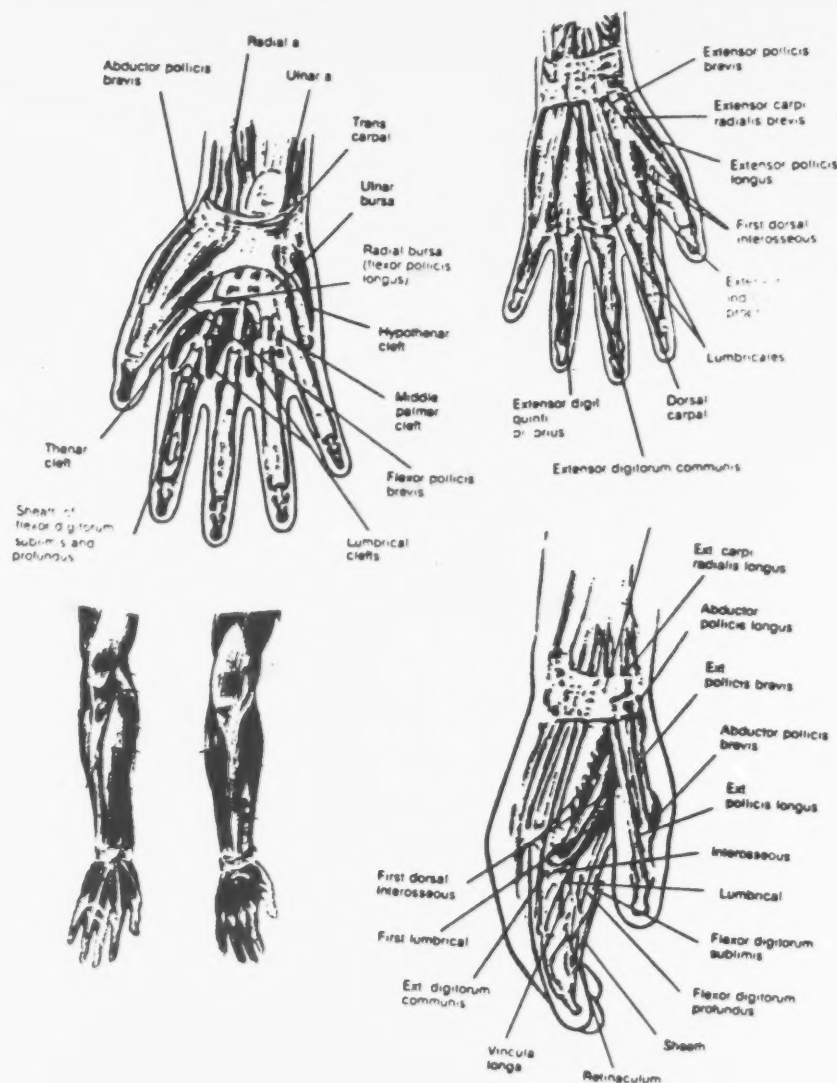
After 6 months of hard work Steve can help!

THE HAND:

The hand is of all the limbs the most complex to rehabilitate. Included are three illustration of the muscles and tendons of the hand, from the side, from the back and from the palm to give you an idea of the complexity of an undertaking. Each of the muscles and tendons specialize in only one movement. There is one illustration of the hand and the arm. You can see where the tendons and the muscles are anchored in the bones near the elbow. For instance, if you would rehabilitate only the thumb, that would not improve the ability of any other finger or all parts of the hand. This is a formidable task and this manual will guide you step by step.

If the arms (and/or the legs) of your child are noticeably deformed, get an inflatable splint*. (You can order them directly.) That is frequently the case because the children have been kept curled up and inactive for such a long time. Look at the picture of the muscles in the arm and then at the muscles in your child's arm. When you move his arm some tendons and muscles in the back of your child's arm are overstretched and the inside muscles and tendons are too short. With every move your child compensates, switching like a loose hinge back and forth. Under those conditions you cannot do any one exercise to come off correctly. However, if you put the arm into an inflatable splint, crooked and all, you can lift the arm, without involving the other muscles. With the splint inflated, do all the exercises which ask for a "straight" arm so that the shoulder muscles are strengthened first. Then slip the inflatable splint over

the hands and the lower arms short of the elbow and do all the exercises involving the shoulder and the elbow.



QUESTION II:

WHY THE MAXI-MOVE PROGRAM?

The question of how the human body works is very complicated at the best, and how the human body is meant to function is even more complex. However, it is certain that left without outside stimuli, the human body will never develop. No human being has near reached the capacity of his brain, not even the most brilliant. Strength and endurance will never develop unchallenged. They are a response of the organism to the demands made upon it. When stress is regularly applied, the muscles respond by increasing in size and thus strength and endurance are possible.

In the face of a CP handicap, the organism is not able to respond, because there is nothing to respond to. At the same time, the astronauts certainly were in top physical condition before being placed into orbit. Once physical activities and known responses were eliminated, their organism adapted to the new environment (to the absence of gravity) by shutting down the entire system. In weightlessness of space, it decided the organism had too much bulk and weight.¹

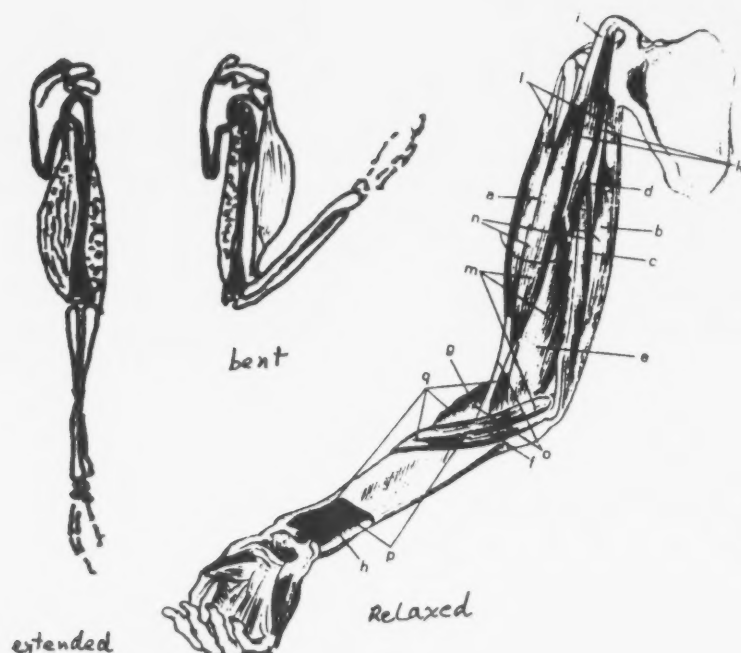
What happened in weightlessness? The metabolism of the astronauts shut down. There was no need for the bulk of muscles. There was no longer a need for strong bones. The muscles shrank and the bones shrank.² Calcium was

leached out and expelled through the kidneys. This is a common response to those bodies paralyzed in accidents. To the 45th day increasing amounts of calcium can be measured in their urine, including that given by mouth.

Shut down, the needs for normal metabolism is the same as for humans in orbit, or humans on a water bed. The only difference of these humans and the CP is that the latter never got started. That does not mean, that the involved limbs of the CP could not be challenged and trained to respond normally like those of the GIs who were put to simulate the handicap. Had not their muscles shrunk and lost their strength? Had not their bones lost their density and shrunk measurably? Indeed, nine months later their bones were thinner and brittle; their muscles had atrophied, and their food intake and with that their metabolism had shut down to the point of vegetation. Passive, exercises worked like charm, rehabilitating their organism was equally as fast as that of the men in the other group who had to do it on their own. Just because this has not been tried with cerebral palsy children does not mean, it does not work. In deed, four 30 minute periods spaced throughout the day have proven adequate in getting their organism started. Most CP children under six years (including spastics) seldom have structural, non-reversible changes in their skeletal system ¹ *(as long as there have not been operations on the muscles and ligaments)* and therefore have the full benefit of recovery, to a point where many can hardly be distinguished in physical ability from other active children.

¹ Leach 1970 ² Naftichi 1980

¹ Fujiwara 1976



LESSON # 1:

Improvement in physical ability and performance can only come about in direct response to the demands of stress. It does not matter how the stress came about, but that it was real and a regular part of daily life. This stress we shall call: physical fitness. It is a definite scheduled vigorous form of exercise; it is strenuous for four periods, of 30 minutes in duration. The improvement in strength and endurance depends diametrically upon the amount of stress placed on the system. The degree of improvement is proportional to the magnitude of the stress applied.

LESSON # 2:

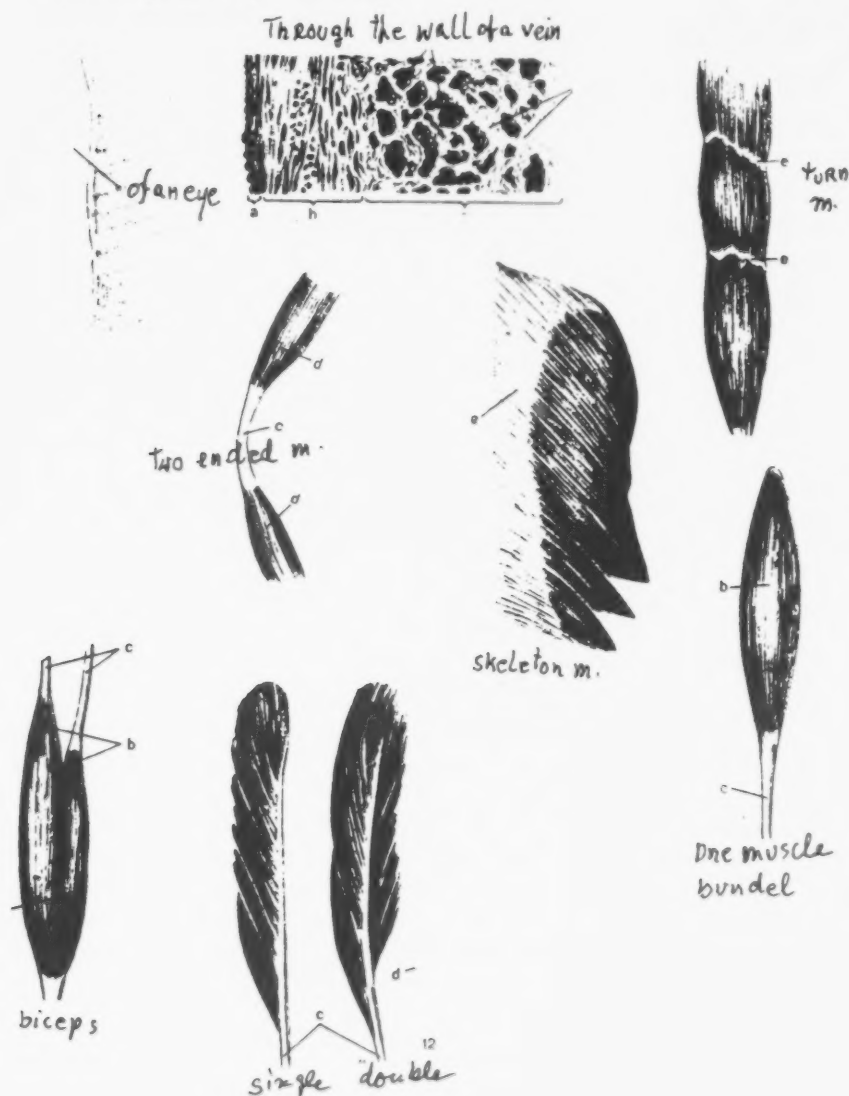
Our bodies react with a minimum of commotion (like water running down hill by least resistance), that is, with the least expense in energy. Each physical activity calls forth a specific response. That response is related to the nature of the stress, and is selective and specific, resulting only in the improvement related to that particular stress. (To illustrate this: The writer had the opportunity to climb the Giza Pyramid. Being pulled up, or chinning up 390 or more blocks 40 inches high, she reported: "I had a muscle ache for fully two weeks in the craziest places, in muscles, I never knew I had.") For your child, this is like climbing the pyramid and feeling for the first time muscles he never knew he had.

Exercise, voluntary or involuntary, has not only a good effect on the muscles, but also on the activity of the heart and the lungs. Running will develop the muscles in the legs, but will not have a beneficial effect on the shoulders, the arms and the hands. You have experienced it. The development of the muscles in the body can proceed lopsided. This is demonstrated in partial, laterally involved CPs. One side developed perfectly, while the other side remained stunted. The strength of the muscles and the strength of the bones always go hand in hand! This is illustrated by the following:

Greek sculpturers were engaged to produce a likeness of the athletes who had won in the Olympics. The statues they created are so excellent that by studying the muscles of the

statues, our sports' experts can tell us after 2500 years in which sport they had won!

LESSON # 3:

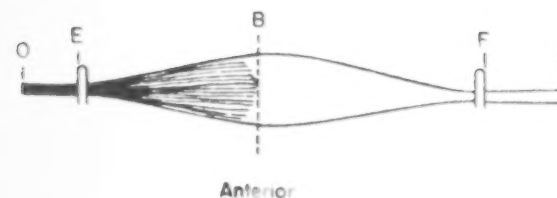
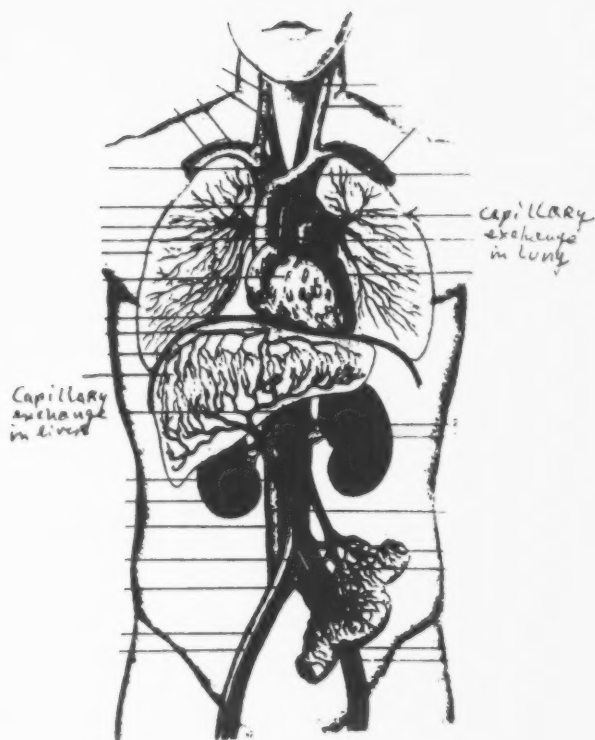


The law of gravity is determined by nature, just as the reaction of stress upon the body is predictable. The tighter the muscles are hugging the bone, the more they are able to massage the bone, and the stronger the bone becomes to match and withstand the pressure of the muscle. The bone simply accommodates the pressure of the muscle, massaging it. For instance, many more women of all ages get osteoporosis than men. The reason? Women in general shun strenuous exercise and heavy work, sitting around knitting. On the other hand, the cerebral palsy child is cheated out of this vital procedure because of benign neglect.

Let us look at the muscle system so vital for a healthy bone skeleton. There are over 500 different types of muscle bundles serving our body, helping us to function so efficiently. All the muscles are attached to the bones by thin but very strong sheets of connecting tissue. These are the tendons, best observed on a turkey's leg. They vary in length considerably. At the other end they are attached to muscle bundles. Consider the fingers: the muscles activating them are attached far away in the lower arm bones, between the elbow and the wrist.

How can you make certain that that is so? Take one hand and hold the wrist of the other real tight . . . then play the fingers. Now take a hold of the center of your forearm . . . play your fingers, form a fist and release it. Now hold the arm real tight just below the elbow . . . play your fingers, form a fist and release it. You don't need more proof, you

can feel their action. You can even feel the action of many muscle bundles from the elbow to the finger tips. If the muscles themselves would all be seated in the fingers, their bulk would preclude function of the hand. See illustration #1.



The muscles are all individual bundles of fiber; each fiber is an individual elongated muscle cell, and each and every fiber is served by its own network of tiny blood vessels, called capillaries. These capillaries are most important, for they provide this particular fragment of the whole muscle with just the right amount of food and oxygen. That is part of their function. However, where something is fed, there is also waste. These capillaries are also the garbage collectors, which transport the wastes to the veins which take them into the intestinal tract where they are eliminated through the kidneys, or they push the wastes through the skin as sweat. That is why sweat tastes quite salty or even smells.

Now perhaps you can understand the problem besetting your child: If the muscles have nothing to do, the capillaries have nothing to carry. They bring no food and also have no wastes to carry away. However, this does not mean they are not there! If they are not blocked by lesions from operations, they are very much alive, slumbering in a vegetative sleep, ready to spring to action.

CHAPTER III

THE TAMBOURINE GAME

There are two ways of holding a tambourine*.

A. Put the fingertips on the skin and hold the inside rim with your thumb or,

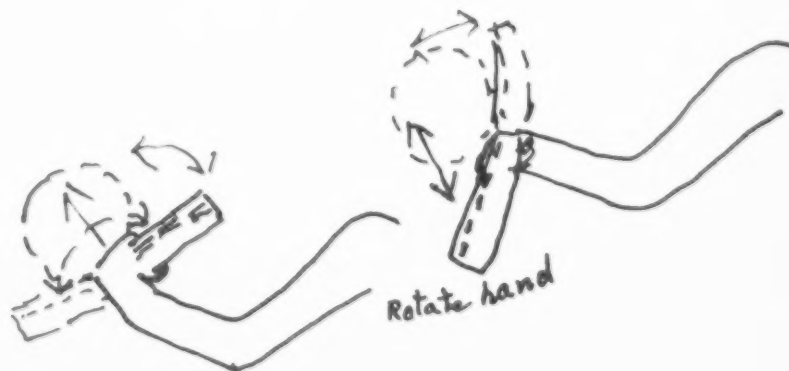
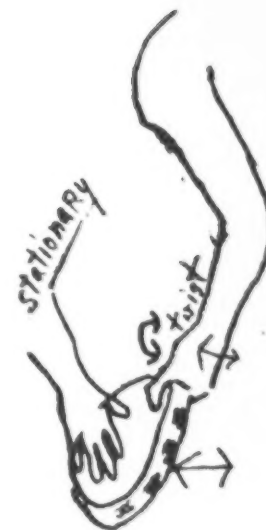
B. put your thumb on the skin — straddling the rim — holding the inside rim with your fingers.

A Take a hold of the tambourine skin with your fingertips and the thumb inside. Bring the tambourine parallel to your arm. Bend your wrist backward to bring the tambourine upward, sideways, or downward.



Hold the tambourine stationary and bring the other hand toward it and tap it. Hold and practice a rhythm with both hands.

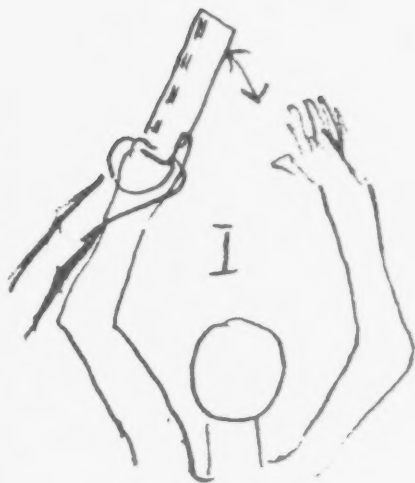
B Put your thumb on the skin and hold the inside rim with your fingers. That will bring your tambourine in line to extend your arm. Your child's arm is slightly bent. With a quarter turn tap the tambourine on your child's head. Then, instead of touching hands, you can do all the other arm/hand exercises, and each time you will strike the tambourine where hands should meet.



Now play a game, let the tambourine strike his head (watch out—not with the rim), then turn it downward and hit his right knee, and the left; next reach for his right toes and for the left. Now put the tambourine in his left hand and do the same.

Professionals hold the tambourine almost any way. There is no right or wrong way. Parents, use music with it and try to keep the rhythm. These are coordination exercises. Your thumb is holding his thumb and your fingers his. Hand positions here are to train the grip of thumb and fingers, while straddling the rim, which prevents his hand from collapsing.

When at rest, put the tambourine within reach and eventually your child will reach for it, because the tambourine excites him.



HEAD EXERCISES

These are exercises designed to help him hold and move his head better.

Holding his head is one of the most important functions as an independent human being. Usually the baby tumbles and tumbles until his neck is strong enough to carry his head. Your CP child has overstretched some of the muscles and others have shrunk. We suggested to get a cervical collar* for sitting upright, for eating and some of the exercises, but not to be worn regularly. Right from the beginning you had the carrying exercises in the upright rather than in the horizontal. You do these exercises without a neck collar.



HEAD EXERCISE # I

1 Be seated comfortably with your child before you, facing in the same direction. Hold the left side of his head above the ear, firmly pressing his right side against your chest. With your free hand take a hold of his chin, opening and closing his mouth five times and massage his chin, and his neck all the way down to his left shoulder.



2 Next do the same for the other side. Turn his head and hold his right side above the ear, firmly pressing his left side against your chest. Hold his chin with your free hand and move it to open and close five times. Massage the right side of the chin and neck to the right shoulder.



HEAD EXERCISE #II

Place your hand half over and half under his jaw bone, while you place your hand in back of his nape and, without changing your hold, make slightly rotating motions toward the left shoulder.



Next you change hands putting the other on his chin and in the nape and slightly rotate toward the right shoulder.

Do both exercises five times.



HEAD EXERCISE #III

Your child is sitting in front of you. Take both of your hands and place them firmly on the child's head above the ears.

1 Make him look down to his knees. "See your shoes?"

2 Bring his head up to look straight "See the window?" and then up into your eyes. "See the lamp?" And down again. Repeat five times.



LESSON #IV

1 Still sitting in the same position, place hands firmly above the ears. Now you tilt the left ear toward the left shoulder and then bring it back up.

2 Now you tilt the right ear toward the right shoulder and bring the head back up.

Alternate between the two positions five times.



HEAD EXERCISES # V

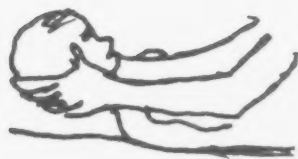
HEAD ROTATION

Hold his head firmly in both your hands above the ears, looking straight ahead.

1 Now you turn his head to look over his left shoulder. then bring it back to face straight.

2 This time you turn his head so he can look over his right shoulder. (Don't force him out of his comfortable position, even if you can only turn the head at first a couple of inches in either direction. In a couple of weeks you will succeed very much better.) Make it a happy experience.

Do that once a day.



HEAD EXERCISE # VI

1 Put your child on his back on the table, letting his knees hang down over the edge, his arms lying in resting position next to his trunk. With one of your hands hold down his shoulders. Place your other hand under the back of his head and bring his chin to his chest so that his mouth is closed.

2 Lift up his feet and set them on the table, knees up. Now put your arm under his shoulders and lift the shoulder about six inches. Take your free hand and put under his chin, pushing it back so that the back of his head is resting on the table.

Change off three times.

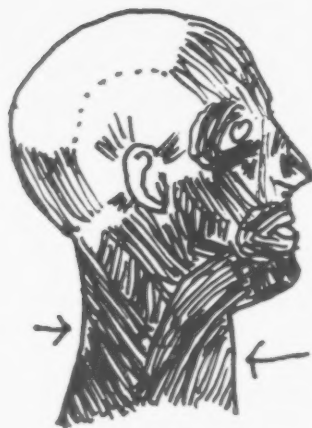


NECK EXERCISES

The diversity of the neck, with its ability to twist and bend to many angles, makes rehabilitation more difficult. Therefore we have to perform movements to limber up the muscles of the cervical spine, the seven vertebrae that make up the neck.

Also we must pay some attention to the larger support muscles, which run down the sides of the neck and provide much of the ability of the neck to turn.

Put your little one on the back, hands at the sides. Gently stroke with your fingertips across the back of the shoulders to the base of the skull, using both your hands, one on each side.



Now place both hands underneath the shoulder and with your fingers describe a rotary motion, working your way around to the base of the skull.

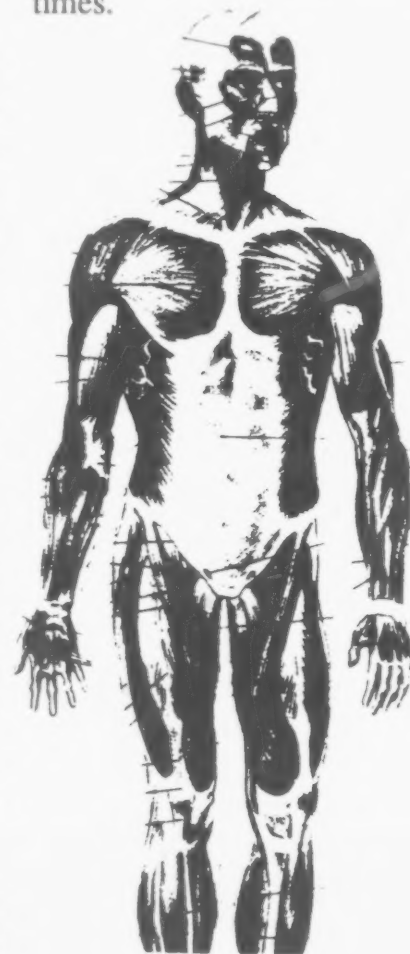
Kneel behind the head of your child. Put your four fingers on either side of his neck below the ear and again rub in some sort of rotary motion along the long muscles all the way to the collarbone. Repeat three times.

Now place one hand under his chin with the thumb resting on his chin. The other hand you place under the nape of the head and the base of the skull. Now pull the head toward you, firmly but not hard. If your child moves also in your direction, there is no harm. Pull at least three times; he will not come apart.

While you have still a good hold on his chin and head, lift his head slightly and

pull the chin downward, stretching his back muscles, and put the head back down.

Repeat at least three times.



oooooooooooooooooooooooooooo

● ROTATION EXERCISE ●

Those that are mentally delayed, accident or stroke victims will benefit greatly from this exercise, as well as the CP. It is especially applicable to all movement delayed children from four months up through adults who are not able to hold their head or who have trouble keeping their balance.

This program has the capacity to straighten out labyrinth¹ of the inner ear restoring the equilibrium necessary for balance and upright orientation.²

In addition it seems that this exercise somehow upgrades the mental ability in children, even those profoundly delayed, creating a mental curiosity and alertness which did not exist before.

This exercise is most effective when done twice or three times every second day for six weeks in a row. It permanently restores the sense of orientation in the inner ear necessary for balance.



Swivel chair

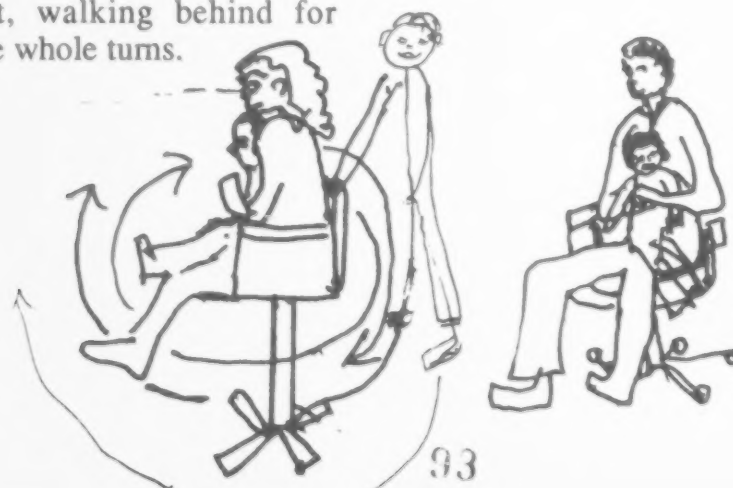


First you have to acquire a pedestal stool which turns horizontally. The type of chair, does not matter, it can be a counter stool, or an old office chair (It must not tilt!, just turn.)

It requires two people.

1 One adult (mother) is seated comfortably in the chair. You take your child on your lap, so that he is sitting very straight, with his head also very straight his face looking ahead.

2 Now the mother lifts her feet off the floor, looking straight ahead while the other person turns the chair to the right, walking behind for three whole turns.



¹Krieg 1945 ²Rasmussen

3 Stop completely. No one is to change positions. Ask the mother holding the child to tell when she is no longer dizzy, while not changing the position of the child (against her chest) in her arms. This can take as long as a minute, but usually about 30 seconds.

4 When the dizziness has stopped, the other person turns the chair to the left, walking again behind it for three whole turns.

5 Stop again abruptly. Now wait quietly until the dizziness has stopped; a minimum of 30 seconds. (Meantime she can rest her feet on the floor.)



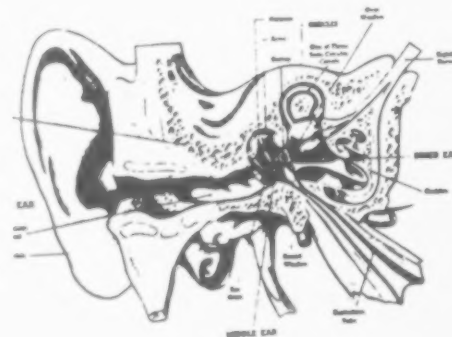
This way mother and child have to be turned alternately three times three rotations to the right and three rotations to the left. Observe the abrupt stop of 30 seconds.

It does not matter what the little one is doing, eyes open or closed, cooing, or quiet, or crying — some babies start singing. Afterwards place the little one (or big one) on his stomach into the playpen or on a blanket on the floor and let him rest; place toys within his reach. Some little ones who have never shown an interest in their environment and toys, will all of a sudden express delight in a toy. The exercise does upgrade mental ability and facilitate head and body balance.

Do that for six weeks twice or three times every other day (with at least an hour between sessions.). Then forget about it or, it can be continued for an other

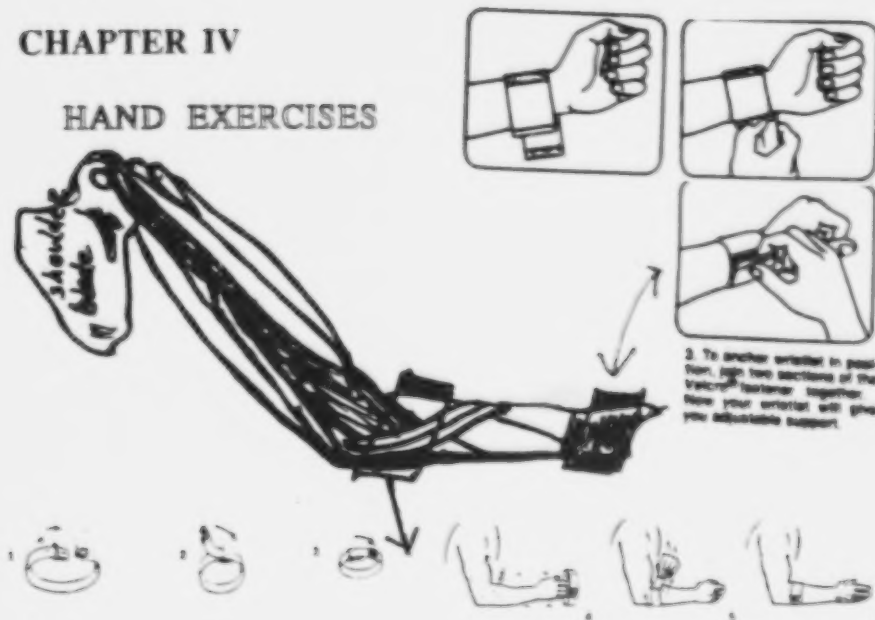
week or two, or it can be repeated three months later.

An adult, or an older child over six can be put into the chair alone, propped up so he sits straight with his cervical collar*. At the end of six weeks, you will find that your child is sitting up much more secure and has much less trouble holding his head. If your child is verbal, he will become much more talkative, alert and confident.



CHAPTER IV

HAND EXERCISES



As you by now know, all hand exercises are also arm and wrist exercises. Older children and all spastics should wear a pair of elastic wrist bands* like tennis players or bicyclists use, to hold the wrist together, giving the muscles less chance to compensate and move in their own pattern. The wrist band is also an excellent addition in aiding the muscles of the wrist to

massage the bones (the epiphyses of the long bones of the lower arm), creating an awareness of the joints.

Take sponge rubber ball* of a size which fits comfortably in your child's hands. Drape his fingers over it and hold fingers and ball in place with your hand. (You can also use a stocking.) The elastic wrist band should be in place. You are in control.

The following exercises are to let your child know he has fingers. Let him feel which fingers you are squeezing, be verbal: "This is the thumb, this is the little finger, this the ring finger, etc."

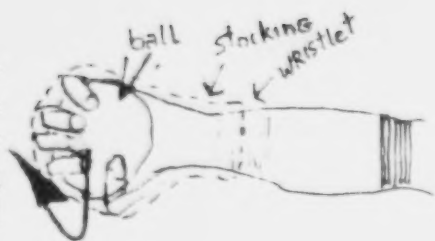
1. Place the ball in his palm in a comfortable and normal position, and pull the sock over the ball and fist to hold it in place.

2. Place your hand over your child's hand and match finger for finger with the same hand and exert gentle pressure in a complete grip, then release all tension. Repeat: tension, apply pressure - grip - release. Repeat ten times or so (both watching TV).

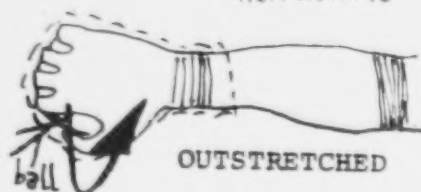
3. Next you apply tension, pressure and grip to one finger only and the thumb, that is, ringfinger and thumb, then middle finger and thumb, etc.



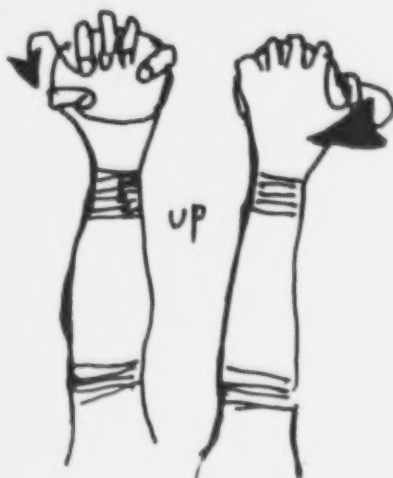
4 Still in outstretched position with you holding the hand over the ball, turn the hand with the ball up and then turn the hand so the ball points down. (By now you know, not to wrench the arm and not to cause pain! This is a ball game, this is fun! Stop turning the moment his elbow wants to come up. No compensation is allowed, be satisfied with one inch [5 degrees] of rotation.)



horizontal



5 With one of your hands holding his hand on the ball in place and the other holding his wrist without the ball, you can do the Arm exercises #I, #III, #V, and #VI. Change off hands holding the ball.



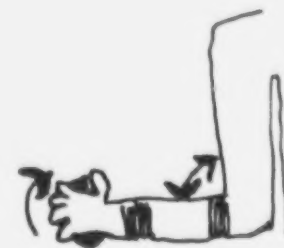
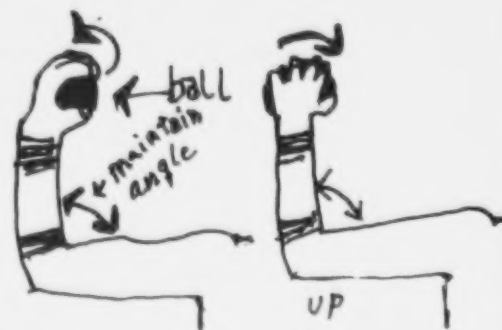
HAND ROTATION WITH BALL

Since each position involves only very specific muscles, any position you happen to do the exercises in is fine. The more positions, so much the better; nothing has to be done exactly alike. Did the ball get away? Let's get it back. Remember, fun is the order of the day, you are partners!

Seat yourself comfortably, on a couch or easy chair; it does not matter where. Seat your child in front of you, with his head steadied on your chest and with your elbow behind his elbow.

1 Hold arm at a right angle with the ball pointing down. Next bring the hand up to the shoulder, going up and down in a pumping motion.

Repeat 5 times.



2 Hold the arm at right angle with the ball pointing up. Now do the same, bringing the ball up to the shoulder and back straight in a pumping motion.



3 With the arm at a right angle, hold the ball up and turn just the hand with the ball 90 degrees, to the front and to the rear.



4 Stretch the arm out sideways and turn the ball downward and then facing in to the front and back downward.



5 Let the hand with the ball hang down. Now turn the ball toward the front and then toward his leg. Turn back and forth five times.

6 Hold the ball as high as you can and turn the hand with the ball 90 degrees or as far as it will go.



7 Hold arm at a right angle. Move the wrist only, and/or the fingers about 90 degrees.



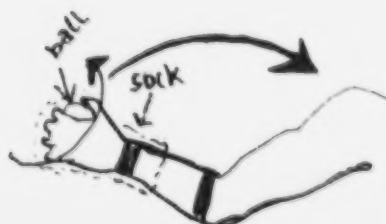
8 Bend the arm as far as it will go and turn just the wrist and hand holding the ball. Back and forth.

9 Devise any other hold; it does not matter.

10 Take the other hand and do the same. Do this with your corresponding hand, both of you facing in the same direction.



Do these exercises once a day when you are at leisure. Your hands and arms will get very tired too. Therefore do five minutes at a time -- then do something else. You could do these exercises with an air splint up to the elbow. Place it on with the ball turned up.



HAND STIMULATION

With your child lying on his back on the floor, sit on a chair above him. Take his hand, holding his arm at a right angle and apply tension. Now you play with his hand. (You can do that even while on the telephone.) Wind one or two fingers around one of his fingers at the time, rubbing it between your finger and your thumb on the length of the finger to the tip, play each finger, then take the next one. Maintain tension.

Take the whole hand into your hand so that you can massage his palm with your fingers, then with your thumb. First you cross the palm with your fingers, and then cross the palm with your thumb.



102

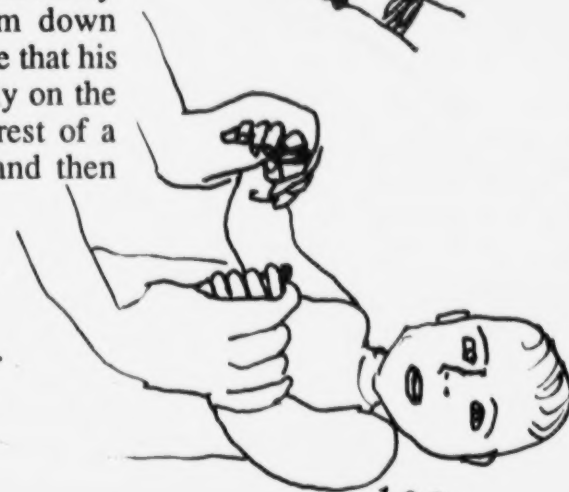
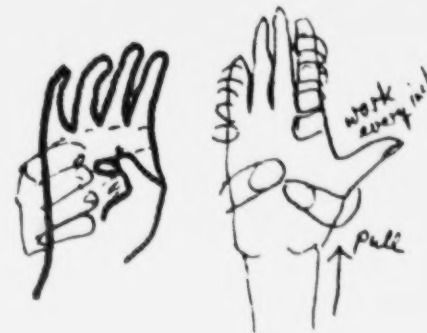


Play with his fingers with yours into a fist. Don't neglect his thumb. Work his index finger and the thumb together, all the while retaining tension of the arm.

Wind the fingers of both his hands around your finger (in a thumb grip), hold them in place with your other fingers and start pulling him off the ground. When you see him hold his head keep on lifting and clock the time he is able to hold his head.

You can easily see when enough is enough and, before there is a crisis, let him safely back down. Let him down carefully making sure that his head lies comfortably on the floor. Give him a rest of a couple of minutes and then repeat the lift.

Repeat 5 times.



103

Now spread out his hand palm down on the floor. Take the heel of your palm and place on top of his hand and give it five very brief thrusts of downward pressure. Then do the other hand likewise.

Turn him on the stomach, put him into crawling position. Spread out his fingers and let his straight arms bear the weight of his shoulders and head. If that does not work, use pressure splints. Then apply pressure thrusts with your palm on the back of his hands.



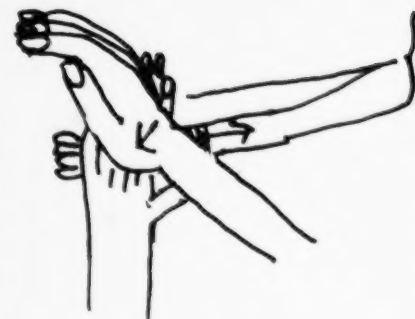
104



Turn him on his back, his arms lying on the floor parallel to his body. Place your palm on his arm and put your other hand palm down on your hand. Now apply short thrusts of pressure on your hand to be reflected on his arm. After three brief pressure thrusts, slide your hands up bit by bit with three pressure thrusts all the way to the shoulder, and then back down the arm.

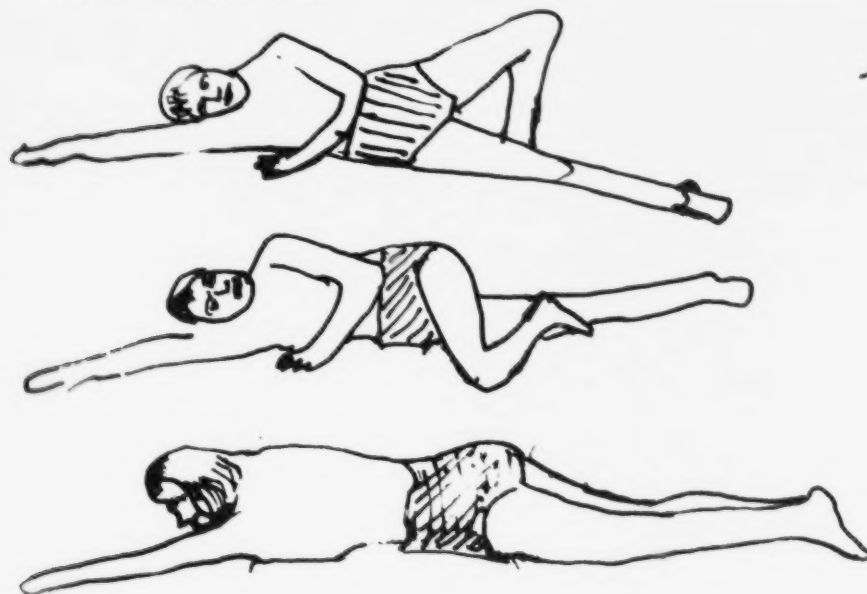
Next turn his palm up and do the same, putting the pressure across his arms all the way to the shoulders and then back to the wrists.

This procedure will increase the blood flow to his arm and hands.



105

THE TORSO FLIP



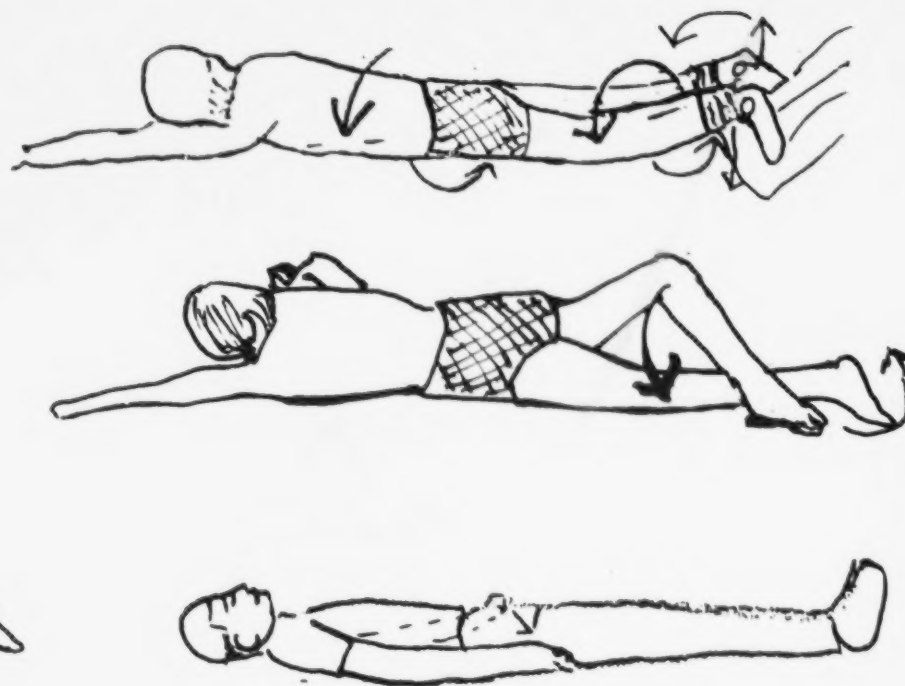
How can you strengthen your child's muscles to turn over?

Put him on the floor or in the middle of his pad.

1 Put him in basic position on his back, his feet together and his arms alongside his trunk.

2 Turn him right first. Take his right arm and place it straight up above his head. Put his left arm loosely over his stomach, reaching across.

3 Keep his right leg under tension straight while you take the other foot with a slight bend of the knee over



the right knee, the left foot still in contact of the floor. Now lift the left foot a little until your child turns over.

4 Since it went so well, non-stop, bring the left leg right back over and flip him right back on his back. Do that a couple times until you get the hang of it.

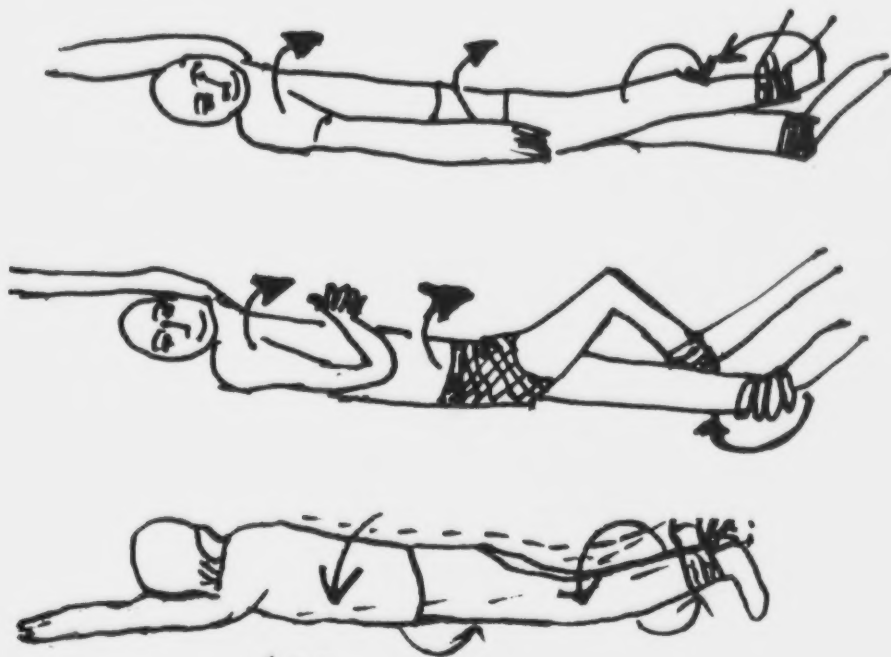
5 To turn left, lay his left arm comfortably above his head. Place his right hand on his stomach, make him reach across. Make sure his left foot is stretched out straight as well as it will go. Set his right foot at an angle then lift the heel, tilting his knee over his left knee and let go. He is turned.

6 Now make sure your child has lifted his nose from the floor. See that his right hand is in crawling position and not squashed under him. Put the left hand also in crawling position. He is on the stomach.

7 Next stretch out his right arm, the left arm still in crawling position. Now bend the left knee and set his left

foot down on the other side of his right knee and bingo, your little one is turned.

This exercise must be done on a hard surface. Do it playfully several times once a day. However, after four or five weeks, don't leave your child lying face up on a dressing table unattended, because he just might try out the flip then and there and roll off!



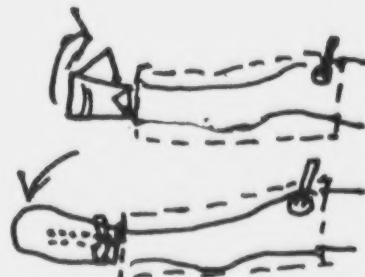
LEG AND FOOT EXERCISES

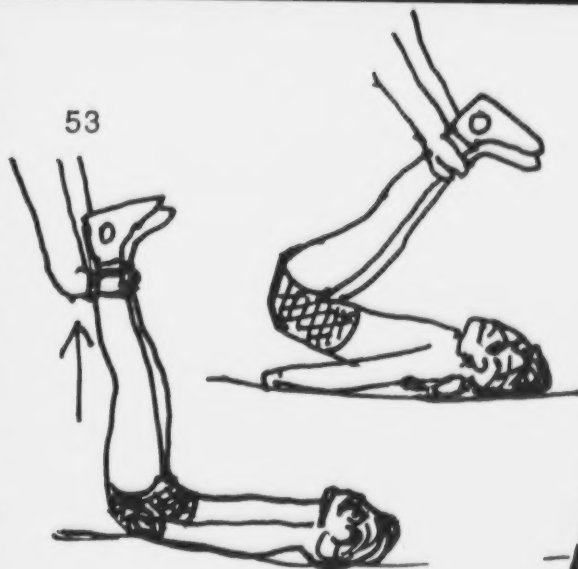
Put on air splints just over his knees. Wait 10 minutes until he has adjusted. Kneel before his toes, take his foot in both of your hands (shoes on) and apply traction. Your knees stop the other foot from sliding your way.

Pivot the tip of the foot to the right and then to the left under full traction. (You should see muscles activated all the way to the hip.) Do this at least five times with each foot.

Next you hold the foot by the ankle keeping tension. With your other hand take a hold of the toes and tilt them toward you and then toward his knees.

Repeat with each foot five times.



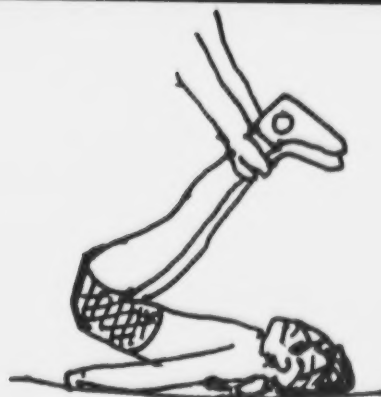


II. PROGRESSIVE EXERCISES

I. LEG & BACK EXERCISES

1 Put your child on the floor and raise his feet straight up, holding them at the knees. Now keep lifting his feet over his head only as far as you can safely go.

2 Slowly lift his legs up and over his face, high enough to allow his bottom to come off the floor. Don't worry if you do not go very far, by the end of six weeks you will manage very well.



II. BACK & LEG EXERCISE

1 Seat your child against the wall as straight as possible. Spread his legs as wide as comfortable, and place the tambourine between feet. Now guide both his hands to reach for his right toes.

2 Return him to base, sitting against the wall, his hands in neutral position, hanging down.



III. BACK & LEG EXERCISE

Still seated against the wall feet closed:

3 Take both his hands and try to touch his left foot.

4 Return your child to basic position.

5 Take both of his hands and tap the tambourine 3 times.

Repeat 5 times. When successful, work up to 10 and then to 15 times.

1 lift both arms. Then lift right leg and swing over the left leg, and at the same time bring both hands toward the right foot in a cross twist.

'If you tumbled, that is alright; if you landed on hands and knees, that is great. Right now you get back into basic position.' Help him back to sitting against the wall. This is fun! Try again.

1 This time lift up both his hands.

2 Lift up his left left leg and put it over his right leg and, at the same time, put both his hands on the floor next to his left foot.

3 Return him to starting position.

Do the set of exercises 5 times. Once it goes well, have him turn on his knees, and back again.

IV. BACK & LEG EXERCISES

Put him on his back on the couch his legs hanging over the edge at the knee.

1 Now you take his right leg, straighten it out and lift it up as high as you can, while holding down the left hanging down.

2 Next you put his right leg back to hanging down.

3 Take the left leg and lift it as high as it will go, while holding down the right leg with your leg or knee.

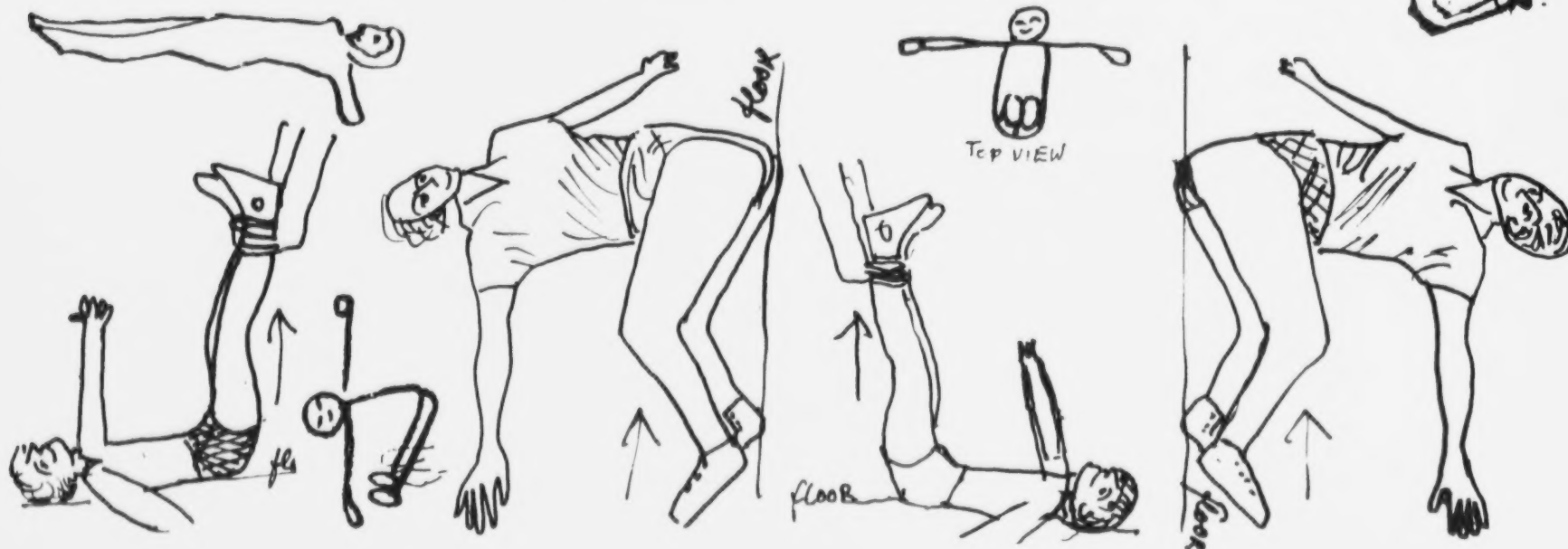
4 Take both legs and bring them up over his head, lifting the rump slightly, and take back down.

Do that five times and when it works well, work up to 10 and to 15 times.



CHAPTER V

I BACK AND LEG EXERCISES



By now you are experienced and not dismayed when an exercise does not come off well at the first try. Use leg and/or arm splints to prevent faulty avoidance motions and unnatural movements. In a few weeks you will manage remarkably well.

Put your child on the floor on his back.

1 Spread out his arms (with or without pressure splints).

2 Take a hold of both legs and lift them up close to a right angle and then turn them both to the right, twisting his rump without bringing his left hand and his left shoulder off the ground.

3 Bring his legs back up, stretch them to full length, and then put them back on the floor, stretched out.

4 Pick up your child's legs as before and bring again to the right angle of his body.

5 This time put the feet over to his left hand, limbering up his rump and back with a left twist.

6 Now bring the feet back up to the right angle position

7 Bring his feet back to the resting position.

Repeat five times and work up to 10 times when you are coming close to succeeding.

~~~~~II. BACK AND SHOULDER EXERCISES~~~~~

Take a stick or cane and let your child take an easy hold of it. Now hold the cane between his hands, while sitting behind him. Put tension on his arms,

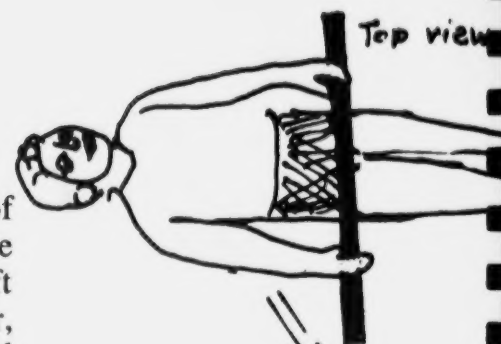
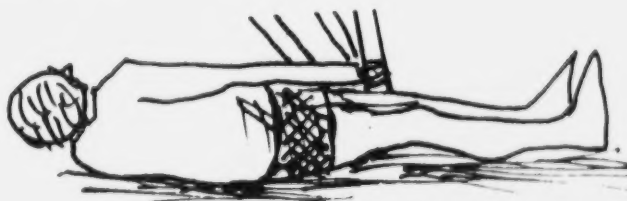
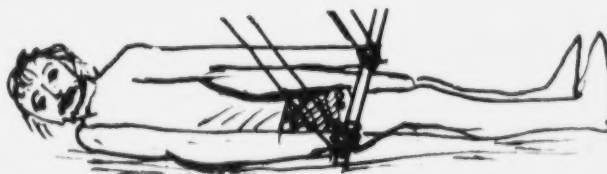
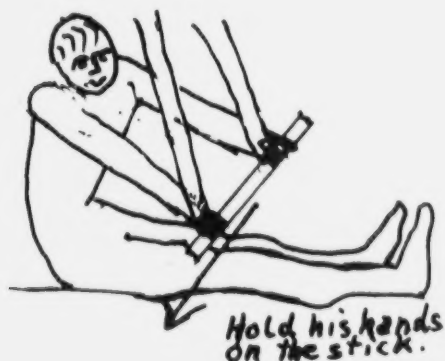
1 pulling them toward his knees until his shoulders and his head lift slightly off the floor.

2 Then pull toward the right, bringing his left shoulder up, his right shoulder and the right hand and the end of the cane to the floor.

3 Next you steer the stick toward his knees, tilting the right end up,

4 and bring the left end of the cane to the floor with the right end straight up. His left shoulder drops to the floor, and his right shoulder and hand lift up.

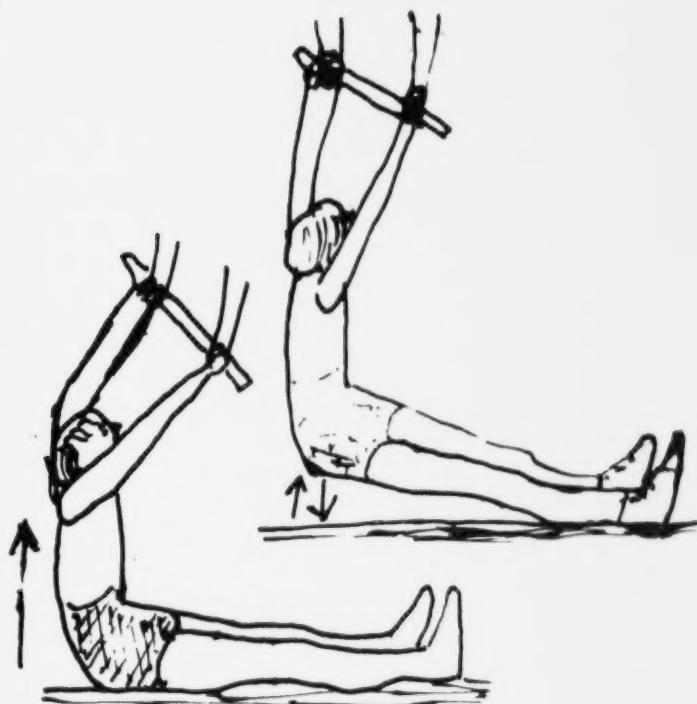
5 Next bring the cane again to horizontal and to his knees, then let him lie down completely and rest.



III. SHOULDER AND BACK EXERCISES

Your child is lying on the floor, feet stretched out and hands lying along side of his trunk.

1 Take a stick or cane and put it into the hands of your child in a comfortable hold with his fingers over the cane, and his thumbs underneath, sparing out the width of his body.



2 Now hold the cane in the middle and begin to lift up both arms with traction until right over his head.

3 Next keep on lifting his shoulders off the floor and toward his feet until he is in sitting position. His hands and cane are overhead.

4 Now you reverse your movements, letting your child's back and head back down to the floor and then bring the cane with his hands down on his trunk and let him rest!

Repeat until he can do it well, then work up to 5 times, then up to ten.

IV. BACK AND SHOULDER EXERCISE

Please try this exercise first yourselves, it is really fun to rock back and forth on your back, swinging your feet and your head.

Your child is lying on the floor on his back.

1 Raise his knees up comfortably by moving his feet toward the buttocks.

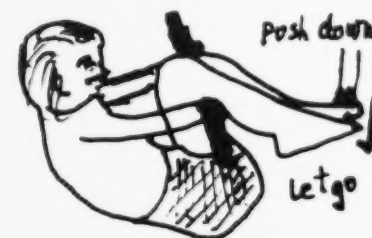
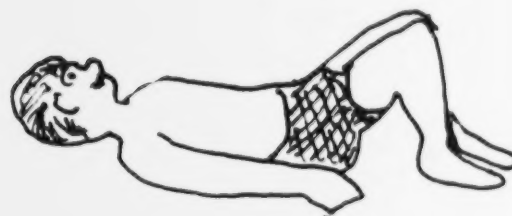
2 Now put the cane under his knees and help him to

grasp the cane by lifting on the stick between his leg until his hands reach the cane on either side of his body, his fingers over and his thumbs under the cane.

3 Let go. This will bring his head and shoulders and also his feet up.

4 Now you can either rock his head up and down, or his toes. Your child will level himself.

Do that as long as it is fun.



=====LADDER EXERCISES=====

ONLY WITH SHOES ON

Parents, here are the first exercises which should be available to your child at his leisure in between exercises. It requires a very solid installation of a ladder in your living room or recreation room, and a pad on the floor, so he has a place to practice and cannot hurt himself if he lets go.

This will be economical and beneficial in the long run for he will take over and relieve you a great deal. It will give him a chance to develop coordination skills on his own, as well as getting himself into the upright position.

Procure a wooden ladder with round rungs, new or used, or, if you are handy, get 2 x 4s and dowels for a homemade contraption.

If so, put the dowels far enough apart that he cannot get his head wedged in between the rungs. The rungs should be thick enough for an easy grasp without cutting the hand. You can set it between two 2 x 4s on the floor and two braces above his reach (at least 18 inches, allowing for growth).

The ladder and pad may substitute for the playpen, a nice place to do the exercises. In fact, this might be your

very best starting point, since you hope he'll move and get busy, to crawl and turn soon. Why not dangle his toys from up the ladder. If he rolls or crawls off the pad, nothing will happen since tumbling off 3-6" does not hurt. Protect it with a waterproof cover and a fitted bed sheet.

1 Put him on his stomach. If lifting up his face, he'd be looking at the ladder. Take both his hands and place them on the nearest elevated rung. (You may use air splints on the arms, but is usually not necessary here). Let him hang on firmly anchored on the pad with his pelvis and legs,

while struggling to control his head.

2 Hold his hands as long as he is struggling for head control. Before he is distressed and giving up holding his head, unwind his fingers and let him plop down on the pad.

3 Once your child is able to hold on, teach him to hold on with one hand on the lower rung and reach with his other hand for the next higher, pulling himself into kneeling position.

4 Next encourage him to tumble back to the pad so he knows that it does not hurt.



Then help him to unscramble back to lying on his stomach or into a crawling position toward the ladder.

Please, do not hurry with the following exercises, until he is ready and it is his idea.

5 Then coach him to reach for the next highest rung, which puts him into kneeling position, with his hands anchored overhead. Now tell him to pull himself up so he is at eye level with the rung he is holding, bearing his weight on his feet.

Often they get so excited that they will let go and tumble down to the pad. (Just take care that he cannot fall on toys and hurt himself).

These first impressions of independent experiences must be happy ones. The shock of such tumbles, somehow, are necessary, before an upright gait is possible.

6 This is a milestone. Once your child manages to pull up to standing position and he knows he has to hold on or go down tumbling. Encourage him to pull himself to his feet at the ladder and to let himself down to kneeling or sitting positions.

7 When he can stand, tell him to reach for the rung over head and hold onto it.



EXERCISE I.

1 Coach him through these exercises: "Pull yourself up and stand!" holding on at shoulder height.

2 "Now let your bottom down and hang on. Fine."

3 "Push with the knees and pull yourself up again to stand. Boy, that was super!" Repeat 5 times. "Let's rest!"

Work up to 12 times.

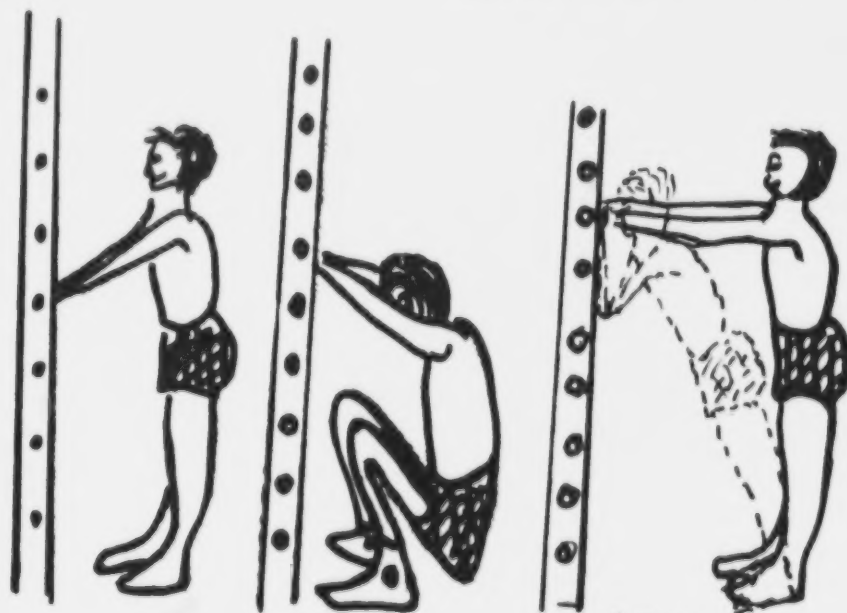
EXERCISE II

1 "Get up and stand. Good, take 2 or 3 steps backwards, stretch out your arms and stand straight!"

2 "Now bend your arms, and pull your shoulders and head to the ladder." Don't move your feet. Good".

3 "Straighten your arms, push away from the ladder. See, now you are standing straight."

Let him do that 5 times. "Take a step toward the ladder, now down for a rest."



EXERCISE III

"Pull up and stand."

1 "Lift up your right foot as high as you can and stretch it out to the right side. Fine!"

2 "Put the foot down" (spread apart, his weight should be on both feet). Good.

3 "Bend your knees like a frog and push up again."

4 "Pull your right foot back to your left foot." Have him do that 5 times and then let him come down for a well - earned rest."

Work up to 12 times.



EXERCISE IV

1 "Pull yourself to stand. Lift your right foot as high as you can and set it down a step to the right." (Let him slave.)

2 "Lift the left foot up as high as you can and set it down to the right. Now lift up your right foot, high, and set it down as far to the right as you can. Pull your left foot next to your right. Repeat: Lift your right foot as high as you can and set it down as far to the right as you can. Pull your left foot along side your right."

3 "Back: lift your left foot as high as you can and set it down as far as you can to the left, bring your right foot down next to your left."

4 "Again lift up your left foot as high as you can and set it down as far to the left as you can. And pull your right foot next to it."

Repeat 5 times, and rest.

Work up to 10 times.



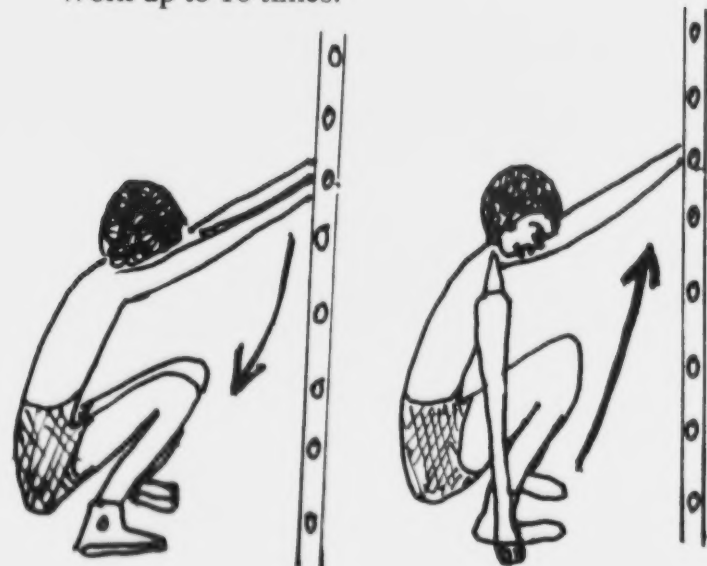
EXERCISE V

1 "Pull up and stand!" Let him hold on at shoulder level. "Now lean back and make a knee-bend".

2 "Take the right hand off the ladder. Touch the floor. Now reach up and pull yourself up again."

3 Have him repeat it, this time taking the left hand off the ladder and touch the ground, and get back to standing straight.

Repeat 5 time,
Work up to 10 times.



126

EXERCISE VI

1 "Stand and hold on to the ladder with your right hand only, take 2 steps to the left."

2 "Hold on to the ladder with both hands, turn your feet to point to the right of the ladder."

3 "Hold on with your left only, walk right past the ladder and on 2 more steps."

4 "Hold on to the ladder with both hands (your feet pointing to the left)."

5 "Take your left hand off the ladder, hold on with your right, and walk left past the ladder plus two steps. Turn."



"I am practicing getting up on my own ... it's hard work, but it makes me very proud I know I am going to be independent!"



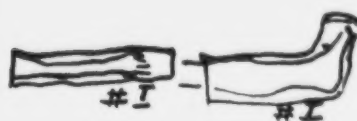
127

Praise him for his effort. Let him practice this alternating between the two sides of the ladder and the rung until he shows a certain skillfulness. Then offer him your arm and let him try to walk on your arm. Next, let him try walking on a walker for 5 minutes twice a day then 5 times a day, until he can do 10 minutes at a time.

You *cannot* teach him to make correct motions. But you can train his muscles to move correctly. Then he has to practice on his own to acquire skill and efficiency like anybody else.

CHAPTER VI

-----GUIDELINES FOR SPASTICS-----



Basically there are two types of cerebral palsy, that is, "athetosis" and "spasticity". Previous rehabilitation programs had by far the better prognosis for the spastic than the athetoid CP, even though the MAXI-MOVE PROGRAM is just as rewarding when working with athetoid. The Air Splint Exercises are for both kinds of CP. For the athetoid child the pressure from the Air Splints will aid tremendously in getting feelings and circulation started. For the spastic CP it is tremendously relaxing.

There is a basic difference in the handling of an athetoid and a spastic child. It does not matter where and how you move an athetoid child but a spastic child must be approached with deliberate firmness.

The spastic child has an increase in muscle tension which governs all voluntary movements. As with the athetoid CP, he is still governed by the earliest movement reflexes which are standing in the way of learning more mature patterns of movement.

Again we admit that they, too, are unable to make correct movements and we are *not expecting or soliciting their*

cooperation. We don't ask them to open their hand and grasp for something, because they cannot do so correctly, and we don't want to discourage and frustrate them before they have started.

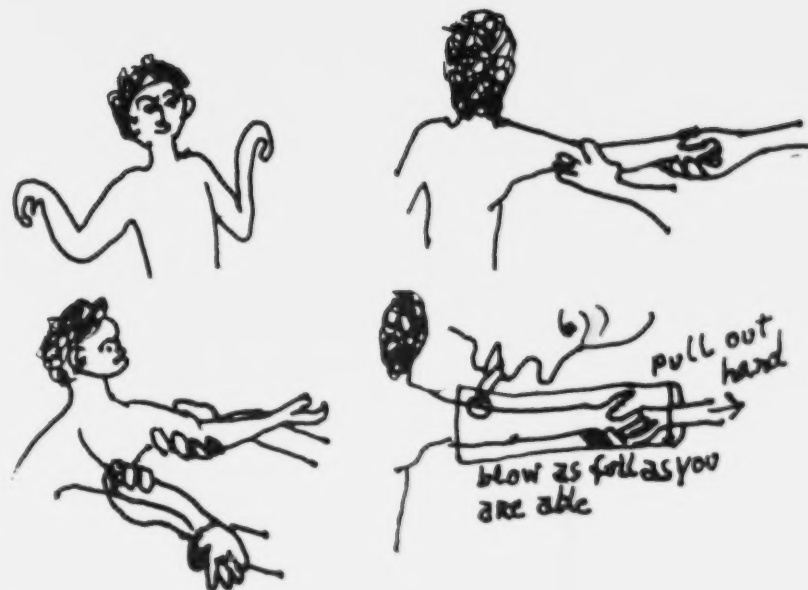
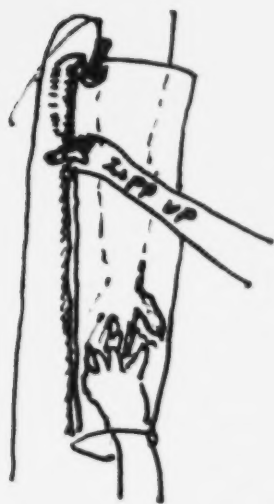
First you have to relax your child. You will say that is an impossible undertaking. However, we are providing assistance:

- #I Air Splints for arms and legs (One child size)
 - #II Wristlets and Tennis Elbow Elastic (washable)
 - #III Medirip self-adherent Bandage
 - #IV Cervical Collar
 - #V 2 non-collapsible straws (only if your child has mouth problems such as suction, eating, drooling or speaking)
- These items may be procured directly from us at near cost plus postage, since they are not locally available.

To be successful in helping your child to acquire the ability of normal movements in the shortest possible time period, it is absolutely necessary that you obtain a pair of each of #I and #II (or #III), in order to cut out unwanted chains of movements, so that you can commence to do the exercises as given in this manual.

The following instructions require that you begin by putting on at or below the joints #II the Wristlets and the T-E elastics, or you can use three or four layers of #III Medirip which can be reused and will do the same job.

The Air splints are put on as instructed and left on for 10 minutes before starting the exercises. Before fully inflated make certain that the hands are opened and all five digits are spread out comfortably. Do not exercise both, arms and legs, on the same day. Do not exercise longer than 30 minutes at any one session (plus the 10 minutes to get used to the air splints.) Try out all the exercises on each other before doing them on your child. Encourage your child to move his limbs while the splints are on. Tell him to fight your moves like a wrestling match against conscious resistance, which is fun and does more for him than anything else.



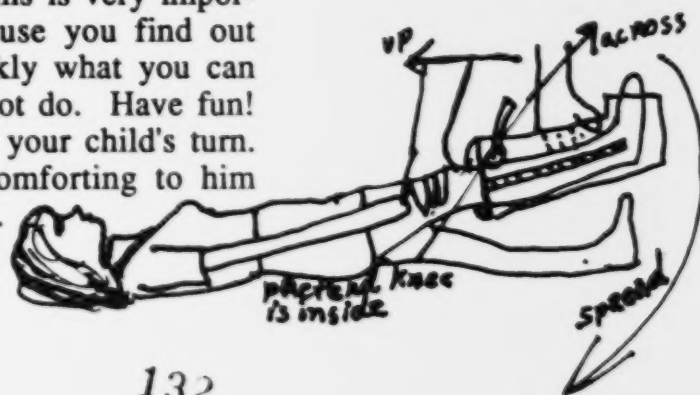
All movements with spastic children have to be done slowly and can only proceed when the resistance has been overcome. Working with resistance is slow but very beneficial and more taxing. For athetoid CP it is a milestone working against resistance, for they can only give resistance when muscle tone has been established!

First the shoulders have to be strengthened before starting with bending the elbows and the wrists. On alternate days the hips are exercised until the resistance is broken, the hamstrings adjusted and developed, and the legs can be moved freely. As soon as they can hold on to the ladder spastics especially begin to stand, with the air splints on their legs. You will find that the spasticity fades as meaningful movements are taking over.

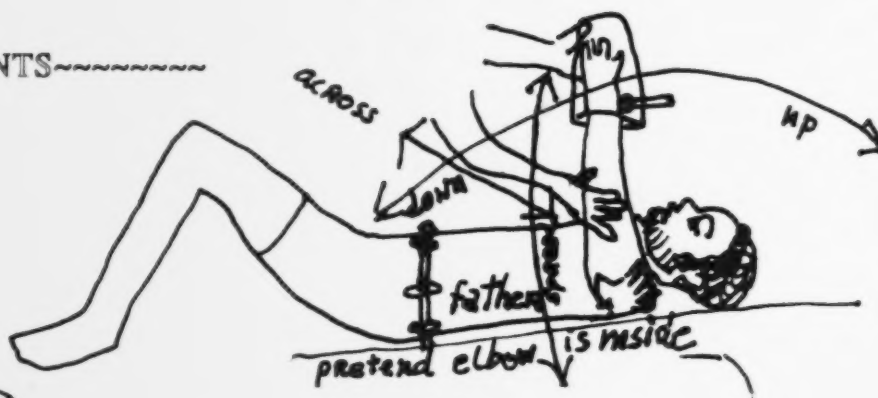
However, do not let him fend for himself until he is truly mobile and has lost all residue of infantile movements!

ARM EXERCISE WITH AIR SPLINTS

Before starting, please **demonstrate** to your child what you are about to do with the air splint. Lie down and have the father put on the splint over your hand (as far as it reaches pretending your elbow is stiff), blow up the splint and go through the exercises, including putting his hand firmly on your shoulder, and turning your hand. Now change roles and mother puts on the splint on father. This is very important, because you find out very quickly what you can and can not do. Have fun! Now it is your child's turn. That is comforting to him and to you.

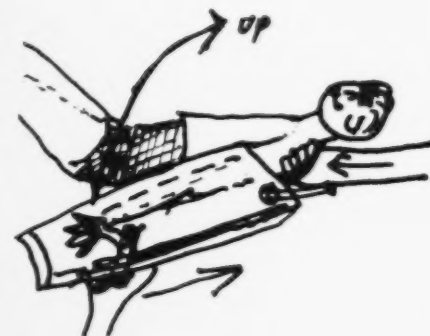


132



1 Put your little one on his back put one arm relaxed next to his trunk with the palm up. Open the zipper and put the arm into the splint and close turning the zipper to the side of the elbow.

2 Start blowing up the splint by mouth. With your free hand straighten out his hand so that all five digits are spread out, and well back of the open end of the splint, and the palm fully visible. Stress is put on being in *anti-spastic* position! (If the arm is floppy, that is fine, too.)



3 Completely fill the air splint; the human lung fills it just right and the warmth of the breath makes the plastic more pliable. — Turn the valve shut and let your child rest for 10 minutes.

133

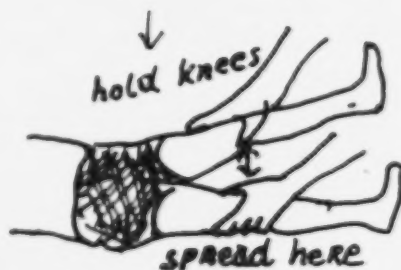
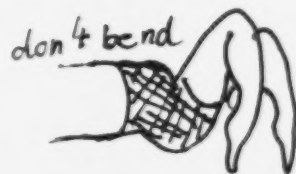
All he can do is to move the whole arm (hand and all) with his shoulder. Even if it is just an inch, he does exactly what you hoped for. Be delighted and encourage him to continue. Eventually he should be able to lift his arm 10 times alone.

Put on the other splint. You will immediately see that the splints don't permit wrong involuntary movements.

Now you are ready to begin the exercises to strengthen his shoulder.

Observe the iron rule: **Don't hurt! Don't lift higher than comfortable. Don't turn the arm further than comfortable.** If your little one starts crying or is **distressed, stop**, even taking the splint off. If it hurts, it does not do any good anyway.

You want to see a smiling face.



1 Grab the plastic near the elbow and slightly push toward the shoulder, putting your other hand firmly on his shoulder joint. Now lift his arm up and down 5 times.

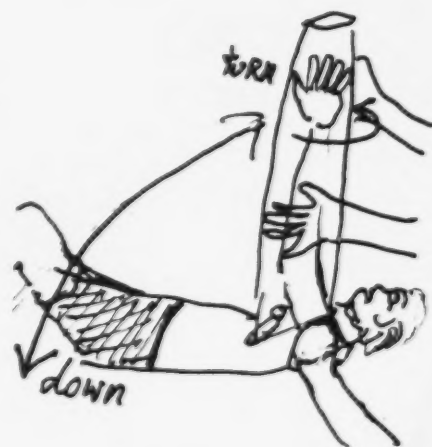
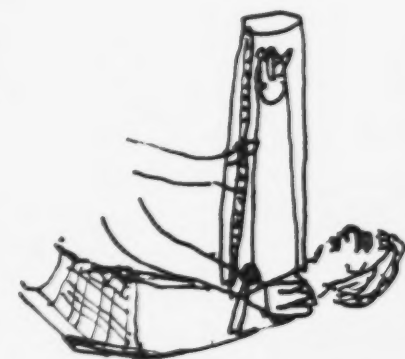
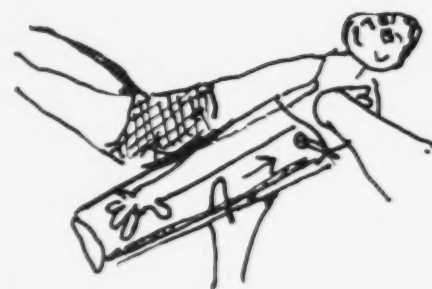
2 Turn the palm down and lift the arm again up and down five times.

3 Turn the hand side-ways and lift the arm up and down five times.

4 With the palm side-ways, bring the arm (still holding his shoulder down firmly) with the palm of his hand down across his stomach and back five times.

5 The palm facing the trunk, move the arm side ways and back five times.

6 Put the arm on a cushion to raise the hand, slightly turned, and let that arm rest in the splint, while you do exactly the same with the other arm.



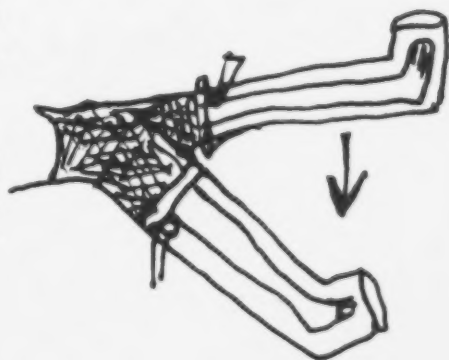
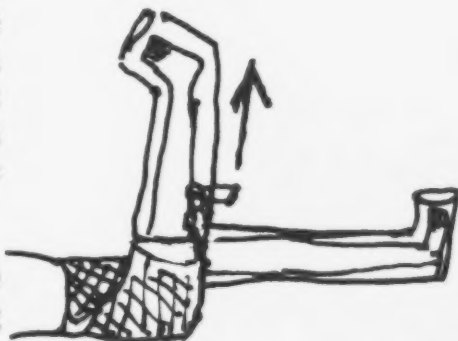
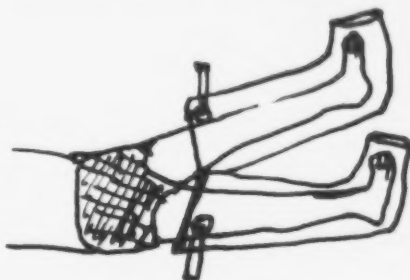
FIRST FOOT EXERCISE WITH AIR SPLINTS

Put your child on his back on the floor and stretch out his feet in a comfortable and relaxed position. Put on the splint on the right foot and start to inflate it. With one hand make sure that the heel and the toes are in a normal position, his toes pointing up. Then finish inflating, and turn the valve nozzle shut.

Let the foot rest for 10 minutes while you are putting on the splint on the left foot.

1 Lift the right foot slowly as high as you can with comfort and let down. Repeat 5 times.

2 Now take the foot and put it as far to the right as possible and bring back. Repeat 5 times.



3 Lift the right foot and pull it to the left over the left foot and bring it back.

Repeat 5 times.



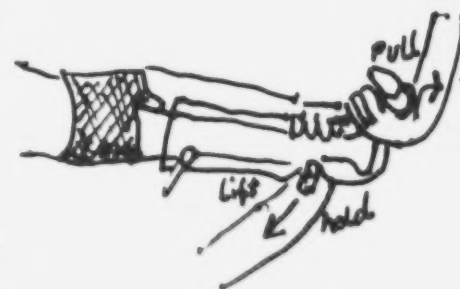
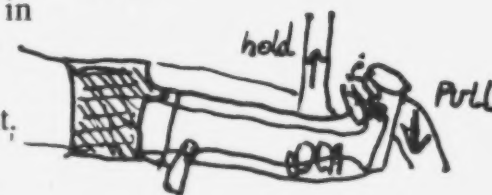
4 Take the right foot in your hand pull slightly and

5 turn the toes to the right,

6 turn the toes to the left.

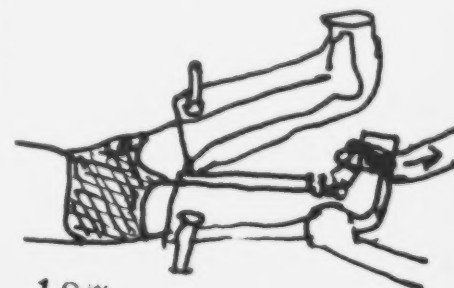
7 Take the plastic with the toes and pull them straight.

Repeat each move 5 times.



Now put the right foot down and turn your attention to the left foot. Do the same, take your time with each movement.

When you have done the exercises with the left foot. Pull both feet in a right angle to the body

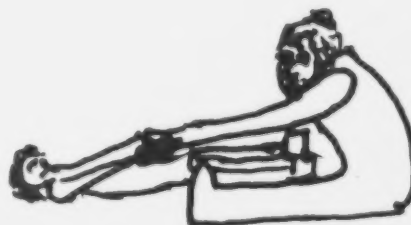
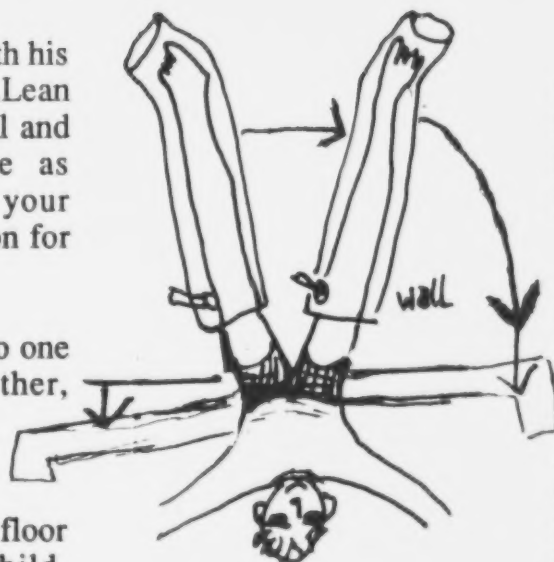


and move your child with his buttocks against a wall. Lean the feet against the wall and spread them as wide as comfortable and let your child rest in that position for 2 to 3 minutes.

Pile the feet down to one side, then to the other, (brushing the wall).

Repeat 5 times.

Seat yourself on the floor in front of your child. Spread your legs and spread your child's legs into yours. Now you take a hold of your child's hands and play a sea-saw game. One time your child's head touches the floor you leaning forward, and the next time you are leaning back until your child is sitting straight. Do that 5 times and work up to 15 times. If your child has trouble holding his head put on the cervical collar*.

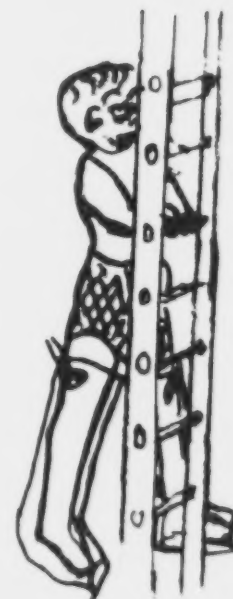


Put him flat on his back and tell him you had enough. Let him relax for 2 minutes, then take off the splints. Let your honey do what he wants.

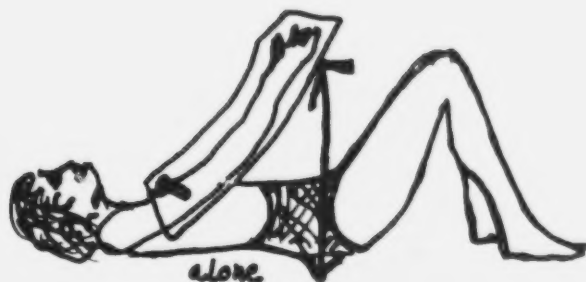
Limit a session with Air Splints to a total of 40 to 45 minutes each.

Once your child can hold on, let him stand in air splints at the ladder for as long as he feels like and holding his head.

Repeat that three to four times every second day until the spastic activity has subsided. This may happen very soon, or it may take two or three months so don't become overly anxious. Then cut these exercises down to twice a day with the air splints, while proceeding to STEP II with the air splints. The next step is to cut down the exercises to once a day but adding the exercises in Chapter I.



~~~II ARM EXERCISE WITH AIR SPLINTS~~~



Do not proceed with #1 with the airsplint until most involuntary movements have disappeared, which means that the spastic activity has been conquered. When your child has the arm splint on, he should be able to move his arm in any direction he desires without shaking his head or body. Holding down his shoulder from the begin-

ning of the exercises with the air splint was to train the muscles correctly cutting out most incorrect movements.

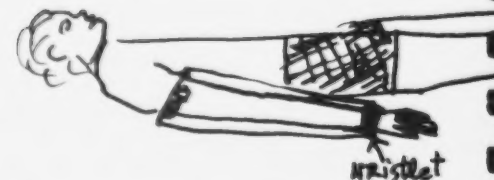
In general, after 5 weeks of exercising with the full air splint, your child will show dramatic changes. You will know when he is ready for new exercises. His shoulders will have a much better mus-



cle tone and show quite a bit of strength to function normally.

It is advantageous to drop one full splint arm exercise and substitute it with a half splint exercise session. In fact, it may go very well. **In no way will it set you back.**

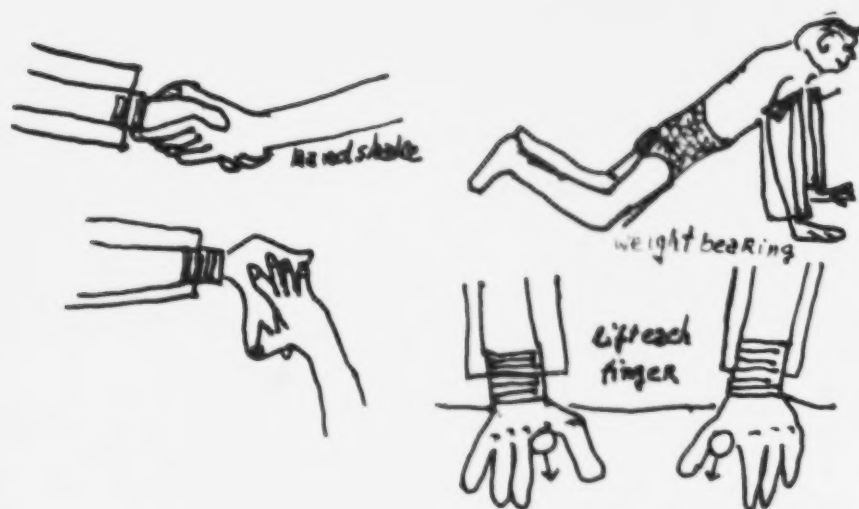
Watch that no involuntary muscle movements are permitted to take over.



I EXERCISE:

Put a wristlet on both wrists, pull the splint as high as you can without obstructing the shoulder, leaving the hand free to move. (*If the splint is too long fold the excess length inside at the bottom.*)

If he has a problem with head control, let him wear his cervical collar.



1 Now move his hands with yours by full contact, facing your child.

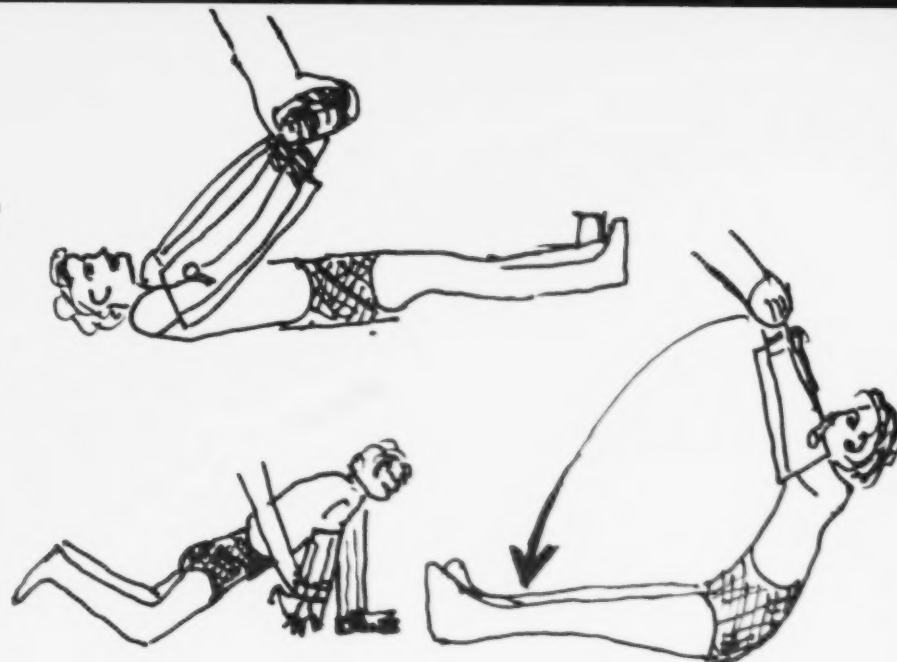
2 Put him on his stomach. Lift him by his shoulders and set both hands firmly, spread out in normal pattern on the floor. Let him bear the full weight of his shoulders and head on his hands.

3 Now see if you can get him to kneel. (Whether you can or not, go on.) Lift one arm as high as you can, letting the other hand bear the weight. and put it down.

4 Next lift up the other arm and set it down.

As you have guessed this is the beginning of crawling and getting into the upright. At this point do all movements 5 times. Make sure that his hand remains open and the fingers and thumb are on the floor in normal position.

Put his hands on the ladder at shoulder height while kneeling.



II EXERCISE

1 Put your child on his back, and fold his hands and his fingers and thumb.

2 Take a good hold of both his hands folded and pull him into sitting position, and so that his hands touch his feet, even pulling him off the ground a little, and put him down again.

3 Now pull him by his folded hands backwards, and drag him across the rug in a loop and back to the starting position.

III EXERCISE:

1 Turn your child on his stomach. Fold his hands again carefully and take a hold of the folded hands.

2 Take both hands folded, and pull him up to kneeling position and then back down.

3 Start pulling him over the rug to the other end and back.

4 Now put both his hands again flat on the floor, repeating exercise #I, 2 - 4

Turn your child on his back.

1 Take both his hands in a handshake pattern into your hands, pull up slightly and pull both hands over to the right side letting his left shoulder rise and let him down again.

2 Still holding his hands in a handshake pattern, pull them toward the left side letting his right shoulder rise.

Repeat 5 times.

Let him rest for 10 minutes and take off the splints..



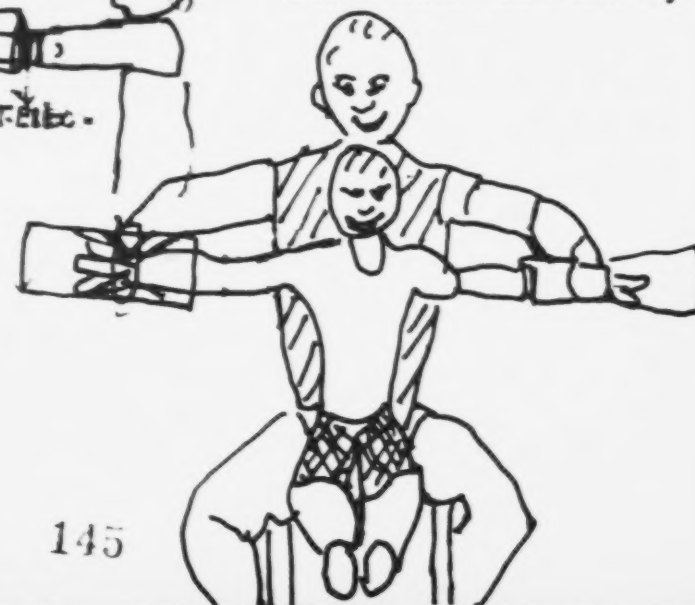
IV ARM EXERCISES

Before starting put on the elastic Tennis Elbow*, holding together the tendons and those from the fingers, fastened on the lower arm just below the elbows. They have to sit good and tight without cutting. Try them out first. They inhibit any tendency of spastic involvement of the other muscles. This is very important. They contribute substantially to successful rehabilitation.



1 While up till now, you had put on the air splint over the elbow, exercising his shoulder only, from now on the air splint is put on short of the elbows, strengthening them and the shoulders. The splints will generously cover the hands and the wrists. Make sure as before, that his hands are spread out, palms up.

Now you are set to do all the exercises in Chapter I without being troubled by



spastic involuntary contractions. However, if you find them still too much of an obstacle, go back to the air splint over the elbow.

THE FINAL STEP:

Put the Wristlets on and the Tennis Elbow Elastics so they feel comfortable and leave them on all day. Any time you see spastic involuntary movements return, exercise with full splints.

Do all the exercises, working your way through the manual until your child is graduating by doing by himself what comes naturally.

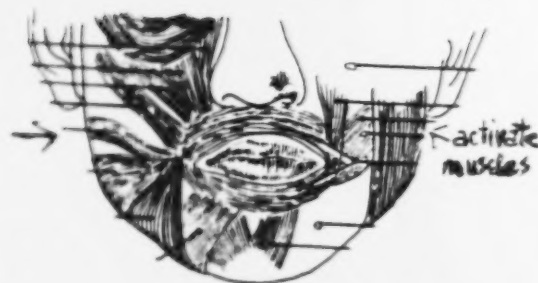
Chapter VII THE MOUTH

JAW MOVEMENTS SUCKING DRINKING LICKING CHEWING SPEAKING

There are a number of books written on this subject¹, which are readily available. No one is claiming unconditional success. However, there is no reason why a CP child 8 years or under should not be able to learn to speak plainly and well.

The MAXI-MOVE PROGRAM has a number of spectacular success stories to date, and is giving you here all we know about laying the foundation for normal mouth functions — no guarantees either!

ICrickmay 1966



If your area offers speech therapy, by all means use the opportunity while you can.

Nothing which is suggested here conflicts with any program offered locally. **The crime lies** in hesitating and not doing anything regularly and systematically, **in doing too little too late.**

As with his limbs, many CP children lack the feeling of anything we call "mouth". Some children have an over developed tongue, while others shock you, having no more of a tongue than a bird, being totally inactive.

The only way we can relate to the situation is to



remind you how your lips and your tongue felt after a visit to the dentist, after a novocain injection. You bit your tongue, or your lips and your speech sounded strange and everything felt heavy and swollen including the glottis. When you looked into the mirror, it did not look half that dramatic, and the more you rubbed, your lips and your jaws the sooner returned to normal.

Your child does not know that something is missing. As with his fingers and toes, he does not know how a cheek, a tongue, a jaw is supposed to feel, he has **never** had the privilege of feeling "**normal**"!

Therefore, we are introducing no new concept, when we advocate doing everything needed to make numbness disappear, so that meaningful therapy may be started. Again, this means doing passive exercises until that awareness is established and your child can begin to work on his own, getting hand-eye-mouth control, and is ready to learn to drink, eat and speak like anyone else.

- 1 Buy yourself a box of surgical gloves at the local drugstore, to keep things sanitary.
- 2 Order 2 non-collapsible sucking straws for teaching sucking and blowing bubbles.

The following exercises are begun most successfully after 3 weeks of head control exercises and in conjunction with them.

Put on gloves.

The exercises are best done in front of a mirror. Be seated, with your child in your lap, both facing it.

1 Put your index fingers into his mouth with your thumbs on his cheek, move both, fingers and thumbs squeezing ever inch of the cheeks and massaging them inside and out.

2 Do the same with every inch of his lips, first the upper lip, then pulling it downward, till your hands meet in the middle, and then pull every inch of the lower lip upward. Let him watch through the mirror.

3 Pull the cheek back at the corners into the "eeeh" position, mimic and say it yourself.



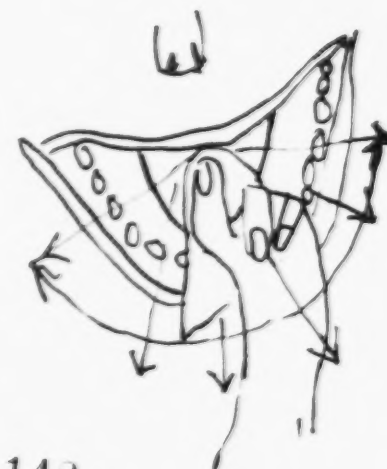
4 Then, holding the lips between the thumbs and fingers at the corner, bring them together into the oohh position, and say so yourself.

Change from one position to the other 5 times, while he is looking into the mirror seeing both your mouths.

THE TONGUE

In many cases his tongue is numb and the only way you can make him aware that he has a tongue to move is to activate the tongue.

1 A tongue is slippery, therefore take a tissue paper between the thumb and index finger of the left hand and "catch" the tip of his tongue (big or tiny) and pull it in and out several times. Pull it out and rotate the tongue clockwise and counter clockwise. Excite him to make noises like aah - ooh; that would be a great step.



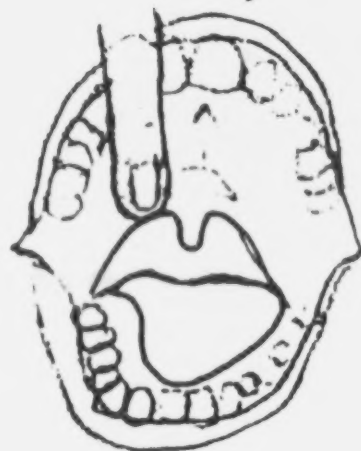
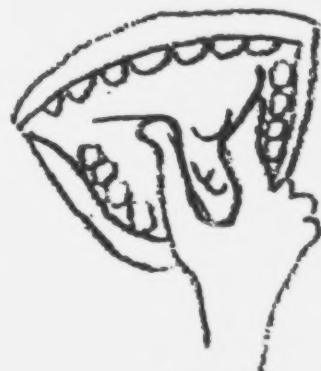
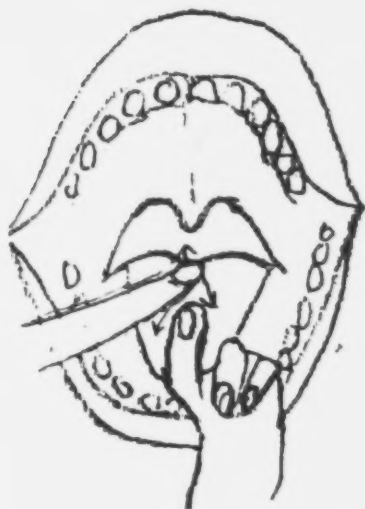
2 Take your right index finger and depress the tongue as far back as you can reach and move it up and down the tongue while you pull and push it in all directions with the other hand.

3 Next you take your right thumb and index finger and squeeze the tongue sideways from as far back to front as you can.

4 With your right index finger in the mouth, lift your finger and with the back side sweep gently over the glottis arch from left to right and back again.

5 On the way out stroke gently through his palate. Let the tongue go.

Call it a day. (Most generally, he will not gag. If he does, it is an excellent sign that he has feeling at least that far back.)



TASTING

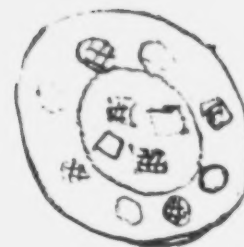
1 Tasting is quite a challenging exercise. This can be done with a child over one years of age. Get a plate with dabs of the following:

A few grains of salt -- sugar; honey -- ketchup; jelly -- mustard; crushed chocolate bits -- salad dressing and liquid opposites such as drops of lemon juice -- orange juice; vinegar -- water; mashed banana -- mashed potatoe, and/or any other combination. Don't use hot spicy food.

Instructions:

1 Put a dab on his tongue with a gloved finger *OR* *teaspoon*.

2 Close and open his mouth several times and lift up his chin, and stroke his throat gently to encourage swallowing. If that does not help,



*fight
warped jaws,
poor bite!*



3 put your hand firmly over his throat right under the jaws and gently massage the corners which anchor the tongue. This helps the swallowing process with slight resistance against your hand.

4 All along talk to him, what you put into his mouth, and what you think about it. Salt, vinegar, lemon juice = Brrrr, sugar, chocolate, jelly = mmmh.

After a while, you can skip a day. You can hide what you put into his mouth and let him tell you whether it is sour or sweet, or what it is. You will be surprised how fast he will develop his taste.



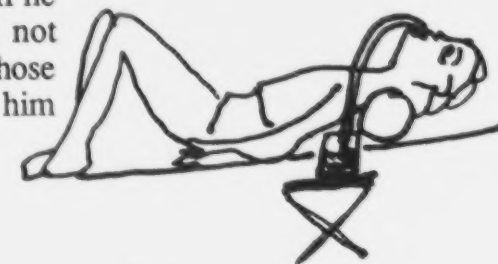
SUCKING

Take the plastic non-collapsible straw (12 inch.) with the smaller hole and some juice your child loves most.

Put him on his back, and a cushion under his neck so that his chin is sticking up, and his eyes are a little lower than his lips. This is an anti-spastic position, in which unwanted movements are at a minimum. Close his mouth.

1 Put one end of the straw into the juice and the other end into his mouth well unto the middle of his tongue.

2 Have him purse his lips over the straw and work it with your fingers into an "oooh" position (also show him that with your lips). If he bites it, the tubing will not collapse; that is why we chose them, a nice way to teach him not to bite the straw.



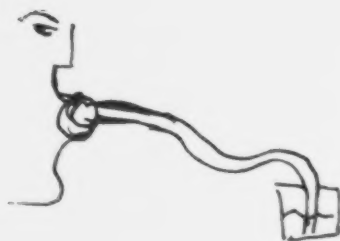
3 Now you hold the glass a little higher so that 3 inches or so, fill the straw nearly horizontal to his mouth. Close the end with your finger, hold it higher and let it run into his mouth.

4 Put your free hand on his throat and massage it and the ends of his tongue, until you feel him swallowing.

Now you repeat putting the end back into the juice and make sure he gets a taste of it every time, until he is sucking in earnest.

As he begins to suck, hold the glass and the straw a little lower each time, until he can suck quite well.

This may take only a few times or it may take 6 weeks or longer, but it is very important for speech development. It is much easier to proceed, if you begin at the earliest age.



5 Once he can suck through the narrow flexible straw, substitute the tube straw with the normal hole. Let him sit.

The lesson to be learned: close his mouth, purse his lips on taking the straw in his mouth and readily swallow. Stroke his cheeks from the jawbone to the pursed lips. Your hand is never far away to keep his mouth shut.

Put him in his high chair and let him drink his juice, milk, soup through his straw. But don't allow unwanted movements with his head or jaws. If biting has stopped, use a regular straw.

Teach him how to blow bubbles through the tube, by making heavy soap suds (with a vile taste) and show him how to blow into the tube.

straw can be put
in dishwasher

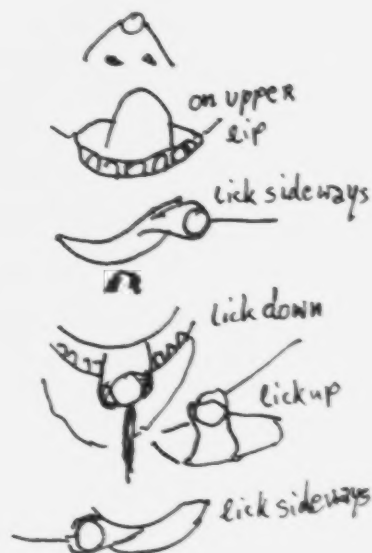


LICKING¹

1 Put your child on his stomach. Put a little milk, jelly or honey in a saucer and tell him to lick it up.

2 Put some honey on his lower lip and let him lick it clean. Then pull his tongue in.

3 Sitting in his highchair, and without changing his head position, let him lick at a lollipop you are holding sideways, right and left of his mouth and a little higher on his upper lip.



CHEWING

To many cerebral palsy children sucking comes very easy as one of the most elementary infantile reflexes. It is also an infantile pattern to bite and pull the jaw out of normal alignment to the right or left, or let it hang wide open. Sucking through the straw, however, will teach him to swallow without opening his teeth and lips and having something in his mouth and on the tongue. The tube straws help a great deal. You can let him have both tube straws in his mouth.

Once this works well, give him hard candy lollipops and make certain that he keeps his lips closed. Take the lollipop away immediately when his mouth opens. Turn him on his back if he makes unwanted movements with his head, until they stop.



¹ Cass, Marion

Take your gloved finger and rub over the gums of his teeth, the uppers and the lowers, in the front and in the back.

Open and close his mouth and in general, continue with his head exercises until the extra pyramidal movements have left.

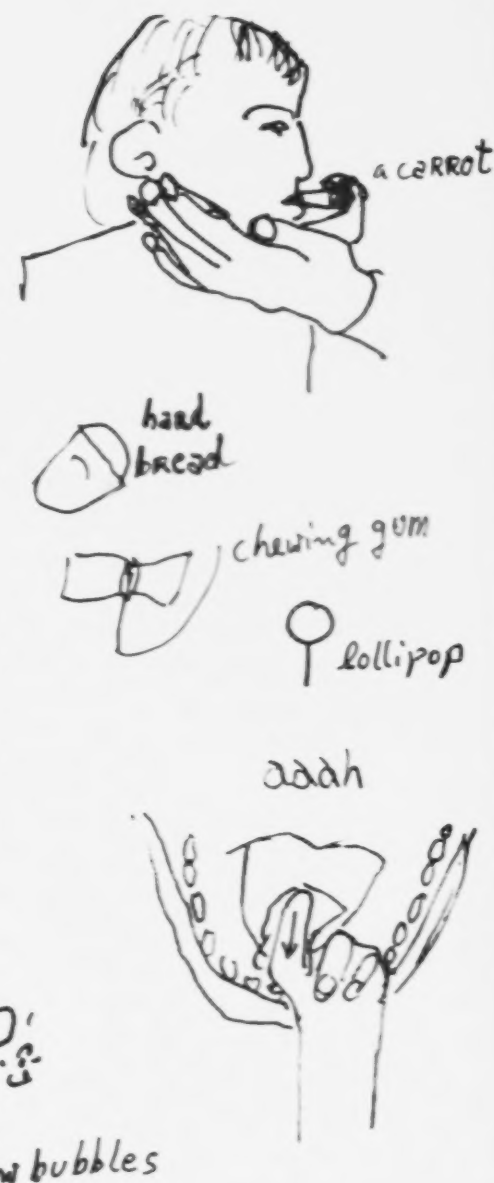
Chewing has to be practiced in different body positions and under carefully graded stimulation. If you have trouble getting tongue action, literally press chocolate or peanut butter against the roof of his mouth, while he is lying on his back, with a cushion under his neck.

The next step is to give him some chewing gum tied on a string. Talk to him and demonstrate how to chew it, and not to swallow it. You hold the string and pull it out after a few seconds when you have the feeling it is going down. The idea is to move



his jaw up and down, and open and close his teeth while chewing properly.

Now you are ready to toast pieces of French or Italian bread real hard and give it to him dry and without butter or anything else or anything to drink. Give him a piece of raw carrot or turnip, or licorice. None of these things are to substitute for a good meal, but they are to help him practice chewing and swallowing. It teaches independent tongue movements. It will improve his eating habit and stop his drooling. Keep his mouth closed!



SPEAKING

It is not our intention to give speech "therapy"; no one here has the qualifications to do so. However, there are three basic areas to speaking well and clearly. #1 is breathing and holding breath. We gave you one basic exercise, pouring cold water over the child after a good warm bath. #2 is the head and neck exercises which to teach separate movements opening and closing the mouth, and to disassociate head movements from other movements. #3 is the drinking through the straw and blowing bubbles. Tell him to blow bubbles with sounds, fffeee, fffaaa, fffoo.

Here is #4 suggestion: Teach your child to make funny noises with his lips, like brrr, blow our whistle*, and continue to say aaah, uuuh and eeeh while opening and closing his mouth.



When you do the mouth exercise, pushing the tongue back, tell him to say. k k k k, and to add aaahk, or ka and o o oh ok or koo, ko, Kok. Teach him to close his mouth and open it with saying aaah, which comes out as MAA MAA. Teach him to make a sh.sh or sssss sound

Encourage him to make noises with the tambourine, and the whistle. Be delighted when he comes with gibberish; love and encourage him. It is a good sign for independent movement. All babies go through that stage and it cannot be skipped. It has nothing to do with age. Just make sure that he keeps mouth closed, and he gives his lips a workout, moving them normally. Try to get a conversation going, he with gibberish and you trying to guess what it is he wants. Show him your appreciation; it's his first conscious effort.



SWIMMING

Learning to swim is a most valuable exercise and the cold water from an ordinary swimming pool is very beneficial for a handicapped child from age nine months on to an adult. Start with 10 minutes, then massage him; a hot shower afterwards until he is warm as toast. Lengthen

gradually the exposure to the pool up to a half hour. If you have a sauna and hot whirlpool available, change off two or three times with ten minutes each; do that twice or three times.

1 Take him to the shallow end of the pool where he can reach the bottom. Crouch yourself to the same level, so

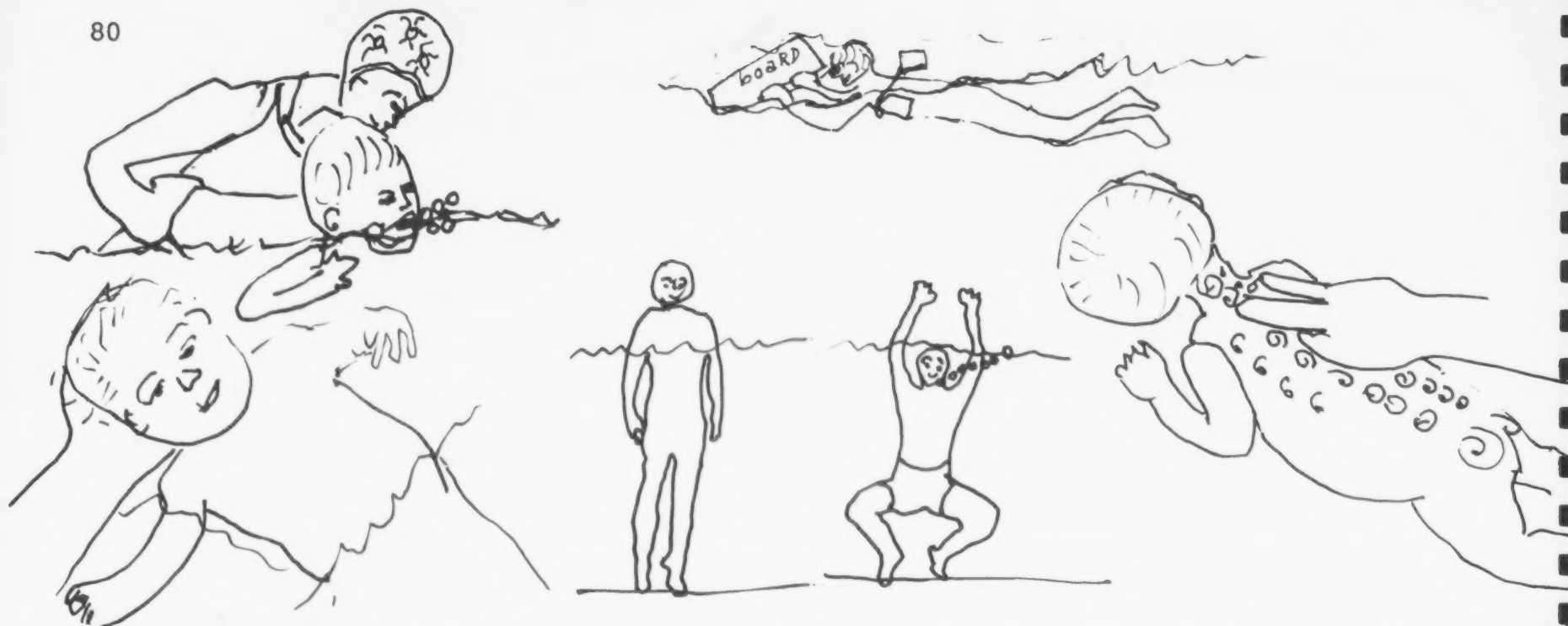
that both your heads are sticking out, holding him securely under water. Show him how to blow bubbles on the water with his (and your) mouth rhythmically slightly in the water, then out of the water to get a breath. You can hop him from one end of the shallow to the other while blowing bubbles (exhaling) and taking a deep breath (snapping for air). Do that

and no more, until he agrees, that it is fun and he does it.

2 Hold him with both hands, his feet on the bottom and let him walk across and back, even if you have to propel each foot forwards with your feet.

3 Lay him on the water and put your hand under his chin. Tell him to blow bubbles as





before, while you dip his mouth in and out of the water at a synchronized rhythm and pull him across the shallow end. In fact, have him open (while he is gasping for air) and close his mouth (while blowing bubbles) against the resistance of your hand

4 When exhaling under water is going well, he is ready to learn swimming.

Get a board on which he can hold on, keeping his head out of water. Take his feet and move them up and down, like for walking and, once he can, let him paddle himself, while you guide the board around.

5 Get a pair of swim wings*, and lay him across the straps (with his chest) and trunk and let him lift his head out of water, blow bubbles

and breathe. You can let him have the board, with which he is familiar with and have him paddle with his feet. When he is feeling happy, take the board away and let him paddle with his hands and feet. This is the best way to teach him head and mouth control, if nothing else. All the family can enjoy the swim and push him around like a float.

6 Always give him a good massage like you would for the bath, for about 10 minutes, neck and head exercises. Then either sauna, hot shower, whirl pool, or hot tub bath, or a sun bath, turning him around, time and again until he feels good and warm, then put him in a shady place and let him sleep (or do what he pleases).¹

Harris, 1978

References and essential bibliography. Comments in brackets () are ours. The * refers to supplies available from the MAXI-MOVE INSTITUTE 112 Mountain Road Linthicum Heights, Md. 21090

Photographer: Earl Douglas, 702 Twinbrook Parkway, Rockville, Md.

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Anderson, Thomas P., MD Department of Physical Medicine and Rehabilitation, Univ. of Minnesota, Minneapolis, MN 55455 Stroke Rehabilitation in: *Arch Phys Med Rehabil*, Vol 59, 1978 p. 180.

"Since, initially, the effort is great, the overflow may be widespread throughout the central nervous system and the muscular response diffuse. With continued practice through the learning process, the patient refines these movements by reducing effort and focusing on the desired response." - - "Because of the confusion caused by many "systems" of re-education and training used in cerebral palsy, there is a need for a well-organized approach to stroke."

(He quotes Kottke) . . . " Therapy can be divided into phases depending on the state of the neuromuscular function of the patient: (1) activation of nonresponsive muscles; (2) reinforced feedback; (3) inhibition of muscles not in a coordinated engram, and (4) improving performance of the engram."

"More beneficial effects might have been shown if the special training had been carried on for a longer period of time . . ."

Athelstan, G. T. PhD. "Commentary", in: *Arch Phys Med Rehabil* Vol 57, 1976 (Oct.) p. 486. res Rehabilitation for the disabled: "Although fragmented services are probably always less than optimal, they are particularly unsatisfactory for the severely disabled"

"According to Dr. Crews, a typical pattern is that the providers of care will demand almost total submission from patients while they are in the hospital and then nearly abandon them upon discharge."

Baltimore school system has hired 35 physical therapists and/or occupational therapists, whose number includes every type of assistants. These 35 more or less certified therapists in charge of the rehabilitation of 850 children identified as eligible and requiring therapy. *Orally*, 1985.

(Theoretically that averages out to two class periods per eligible child per week.)

An other survey has shown that 95% of the therapists working in a school systems throughout the States, had no prior training in pediatrics.

Bloch, R. MD "An Inflatable Splint for the Spastic Hand", in: *Arch Phys Med Rehabil* Vol 58, 1977 pp 179-180.

"The typical decorticate spastic hand position after a stroke or head injury is a troublesome care problem; severe flexion deformities can result from neglect and is quite difficult to keep the hand clean. Indications for splinting are by no means straight-forward and fixed

splinting, in particular, is often painful for the patient with advanced deformities. A flexible splinting approach utilizing a pneumatic glove has been used recently in a case of this type with promising results."

Then following is a description of a hand made device from a blood pressure cuff with instructions and illustrations how they were made.

(Our system is much more efficient, the splints are especially designed manufactured for the MAXI-MOVE INSTITUTE for children under eight.)

Bobath B, "The very early treatment of cerebral palsy." in: *Dev Med Child Neurol* 9: 373 - 390, 1967, a husband and wife team who were the first pioneers to advocate physical activation for CP children including during the first year of life. They concentrate in training Physical Therapists. By patterning they try to train the brain, soliciting the will power and the cooperation of the child.

(Training the brain through patterning does not work. Melinda had Bobath treatment since age 3 months. When 6 years old she was badly crippled. Three weeks were enough to straighten her out. But straightening out a fast growing child is not enough. Each limb must be passively activated every other day with a variety of movements for two months, before the child can substantially aide in its mobilization. If you have trouble accepting this, do only one side, or one limb for two months and you will get the point!)

Burke, E F, *Riding on Spasticity*, 677 Station Road, Amherst, MA 01002) University of Massachusetts, Amherst, MA 1976

Therapeutic horseback riding, common in Europe for 20 years, was introduced to North America about 1968. It has been suggested that riding reduces spasticity. This study is thought to be the first scientific effort made to examine this assertion." . . .

(However the study was not conducted on more than 6 children of whom only two had not had operations.)

"Most interestingly, the two subjects with spasticity who had received no surgical treatment showed marked improvement after riding."

Cardenas, Diana D, MD,: "Muscle Fiber in Immobilization Atrophy", in: *Arch Phys Med Rehab* Vol 58, 1977, p. 423- 426: "Prior to immobilization (of rats), full ankle dorsiflexion was 165° from full plantar flexion. By the end of four weeks of immobilization (in plaster casts), the mean ROM was 0° to 87° with dorsiflexion reduced by about half." - "The cross-sectional diameters in the normal group was 3.21 mm in the group immobilized 2.35 which represents a significant loss of 27% of the mean cross-sectional diameter."

Fiber strands were counted in the healthy and in the atrophied muscle. Using paired test, no significant difference was found." - "however, our results suggest that no true loss of muscle fibers occurs after immobilization" - "loss reported by others may be only an apparent loss

related to changes in the architecture produced by immobilization."

(This means, a cerebral palsy child has everything an ordinary person has as long as muscles and nerves have not been disturbed by operations. Therefore, your child can be rehabilitated, no matter the degree of involvement. You know now the degree his muscles have shrunk at least 27%. You know that his bone growth has outstripped the capacity of his muscles. Many of you can see that effect. Despite everything, there is nothing basically wrong neither with the composition and makeup of his bones, nor with his muscles. They have to be built up by consistent regular spurts of exercises. Nothing else stands in the way of their full recovery. Haphazardly spaced exercises on weekends or Tuesdays and Thursdays won't make an impression at all. You have to commit yourself to put in that one year and every day, either all or nothing.)

(Bone growth in children proceeds from the joints, and the muscles massage the bones so they grow evenly and strong. That is not the case with movement delayed children. They lie cradled in cotton padded containers, held in place, usually on their back. Spastic children jerk at the joints, making passive movements. These movements are enough to entice the bone to special growth only at the joints, which is not distributed to the whole bone since the movements stop there. Thus stimulated, for four years or more, the epiphyses show extra growth. Since the shoulder joints and the hip joints don't have a function they grow out of normal alignment. Normally the hip joints have to bear the legs, and the shoulder joint are

weighted down by the arms and the hands. Therefore, the "CARRY EXERCISES" must at all times be taken very seriously. They are designed to counter the tendency of the epiphyses to pull up, when there is no weight to train them otherwise.)

(In general, children under five have no permanent damage. All the exercises are preventive measures forstalling permanent damage. The ladder exercises, the carry, the carry-hold and the stretch-carry after the bath are of utmost importance. It is cost effective, even if you have to hire Boy Scouts and Girl Scouts to take over sessions; let them have fun and create a mess, let them do it in a plastic pool on the lawn, only "not doing" is wrong.)

Cass, Marion T., *Speech Habilitation in Cerebral Palsy*, (N.Y. 1951) Chapter V. Methodology, she gives an excellent description of mouth, tongue and relaxation exercises and therapy.

This is in part by Groden, as reported on by Drs. Connolly, Barbara H., and Beth T. Michael, "Performance of Retarded Children, with and without Down Syndrome, on the Bruininks Oseretsky Test of Motor Proficiency," p. 344 in: *Physical Therapist*, Vol. 66, 3 March 1986

Crickmay, Marie C, M.A. *Speech Therapy and the Bobath Approach to Cerebral Palsy* (Springfield, Ill. 1966) pp. 61

- 120. Crickmay made a number of astute observations, and coming up with some very practical suggestions.

Cruickshank, William M. Editor: *Cerebral Palsy* IIIrd ed. (Syracuse, N.Y. 1976)

Danoff, Patricia Long, Ph.D. Department of Physical Therapy, School of Medicine, Univ. of Maryland.: Energy Cost and Heart Rate Response to Static and Dynamic Leg Exercise. In: *Arch Phys Med Rehabil* Vol 63, 1982. Even static exercise may be enough to retard muscle atrophy or prevent loss of strength.

Feigenson, Joel S., Factors Influencing Outcome and Length of Stay in a Stroke Rehabilitation Unit, in: *Stroke*, Vol. 10, No. 1, 1979, p. 2.

The following quote, is referring to the elderly stroke victim, however, it is equally applicable to CP involved infants:

- *Reluctance of many physicians to vigorously treat elderly patients with multiple medical problems who have had a major stroke.
- *Skepticism about the effectiveness of rehabilitation in modifying stroke-related deficits.
- *Lack of convincing data supporting the cost-effectiveness of rehabilitation.

*Lack of economic incentives for physicians to rapidly evaluate and transfer acutely ill patients with chronic diseases to tertiary care centers.

*Lack of facilities adequately equipped to rehabilitate stroke patients.

" . . . results in premature referral of many patients to nursing homes or extended care facilities, etc."

(As stated above, this is precisely the attitude and course for many CP little ones. Especially in cases where parents are no longer able to "handle" them, they are relegated to become wards of the State, or spend their lives, 'maintained', in an institute.)

Feigenson, Joel S. MD, "Factors Influencing Outcome of Stay in a Stroke Rehabilitation Unit", in: *Stroke*, Vol. 8, No. 6 p. 651 f. 1977

"Treatment program

The rehabilitation program consisted of 3 to 4 periods of 30 minutes per day of formal physical therapy, occupational therapy." (in hospital setting, from 30 to 120 days).

(If you cut down on the number of sessions, you shortchange yourself. You gain nothing by lengthening the sessions, because your child does not have the reserves for lengthy exercises. Depleting those he has, will take weeks to make up, a setback. You are to have fun, and not to exhaust the little one!)

Feldkamp, M., "Early diagnosis and exercise therapy in the early treatment of children with cerebral palsy." in: *Zeitschrift Orthop* 108, pp.644 - 656, 1971

Finnie, Nancy R., *Handling the young Cerebral Palsied Child at home.* (N.Y. 1975) Finnie has excellent descriptions and illustrations on handling and exercising little CP children.

Fujiwara, Makota, MD., "Hip Abnormalities in Cerebral Palsy: Radiological Study" In: *Arch Phys Med Rehabil* Vol 57, 1976

"A total of 237 hips of children with cerebral palsy were examined annually for three years. The severely involved **spastic** children and those who had **never stood** were more susceptible to hip abnormality."

"The mild abnormalities were found in the younger group; none of the complete dislocations was found below the age of 4 years."

"Relationship to Ambulatory status -- The hips of children who had never stood and walked were more exposed to the risk of abnormality. Almost all the abnormalities were in this group while only one of 81 hips among walking children had a lateralized (mild) abnormality."

(The MAXI-MOVE PROGRAM is designed to counter this tendency.)

Guth, Lloy, MD. Department of Anatomy, Univ. of Maryland School of Medicine, Baltimore, Md. An Overview of Motor Unit Structure and Function, in: *Arch Phys Med Rehabil* #64: pp.408 - 411

"The Motor Neuron"

"The cell body of the spinal motor neuron occupies the ventral horn of the spinal cord and emits a long axonal process which branches greatly after entering the muscle. As a result, a single motor neuron innervates a great number of muscle fibers; the motor neuron plus all of the muscle fibers it innervates comprise the motor unit."

Motor units vary greatly in size. Motor units of muscles specialized in fine control tend to be smaller than those found in muscles subserving more crude functions, and, as might be expected, motor units within a muscle also vary in size according to their function.

Harris, Susan R., "Neurodevelopmental Treatment Approach for Teaching Swimming to Cerebral Palsied Children.", in: *Physical Therapy*, Vol. 58

#8, 1978 Harris evidently has a great deal of experience with relaxing CP children in good warm water, and of making the most of the inherent buoyancy of a person in water.

(In addition to her recommendations, we would like to recommend teaching wading in the pool in the upright position by adding weights to the ankles. This is the only place where they can get a feeling for standing upright without the danger of falling.)

(As to hot water, you have the bathtub, or at best access to a whirlpool. For swimming purposes, or for pool walking exercises just any temperature is fine. In fact, it is beneficial to have both, cold and hot, like a swimming pool and a hot shower with a rub-down on either end.)"

Johnson, Ernest, MD, Ohio State University Hospital, "Infantile Erb's Palsy". in: *Arch Phys Med Rehab*, Vol 58, 1977, 177 f.: "Discussion: bracing and splinting . . . a study on 1,100 cases show that bracing and splinting was not of prime importance in these children." . . . "Rigid immobilization may actually cause dislocation of the radial head in many patients." . . Drs. J.B.

Adler, Sever, JW, and Thomas, JJ..:"after reviewing long term results of treatment in 88 cases, condemning bracing." - "(Johnson) Our management program consists of showing the mothers how to fix the scapula and stretch the humeral adductors and perform passive normal range exercises to shoulder and elbow. She is told to do this with each diaper change for the first two years . . ." - "the child is encouraged in activities which require him to get his arm over his head." . .

"One of our patients plays baseball and wears the glove on his involved side and only needs an occasional boost from his good arm to perform as well as his peers."

Johnstone, Margaret, Physical Therapist, England, *Restoration of Motor Function in the Stroke Patient*, N.Y. 1978 paper, 187 pp, illus, \$8.95

Very instructional and practical. Her use of pressure splints is very much like that recommended here. Pressure splints are extremely helpful in getting CP off the ground, and help settle a good many problems for spastic children. She uses the splints also very early in her program, because one can rehabilitate one joint without getting a reaction of poor movements from other muscles and joints. She has been very successful with straightening out chronic conditions like a tight-fisted hand.

Krieg, W.J.S, *Visualization of the Functional Anatomy of the Ear* (Chicago 1945) Illustration of inner ear.

Kottke, Frederic J., MD "From Reflex to Skill: training of coordination", in *Arch Phys Med Rehabil* 61, pp. 551 -- 561, 1980.

"All motor activity is based on inherent reflexes and on modification of those reflexes by higher centers. The reflex patterns are developed as the result of the neuronal connections and remain consistent rather than showing variability." -- "Thousands of repetitions are required to begin to form an engram and millions of repetitions are necessary to perfect it. Coordination is developed in proportion to the number repetitions of an engram practiced . . . etc."

(Our reply, yes, it takes millions of repetitions, but not necessarily by patterning and in no way should you try to draw attention to movement through intellectual comprehension. It does not work that way, it means wasting time.)

Ladd, Herbert W. PhD, "Regenerative Processes: Evaluation", in: *Arch Phys Med Rehabil* Vol 63
1982 Rehabilitation Institute of Montreal, 63000
Darlington Ave, Montreal, Quebec, Canada H3S 2J4

As shown systematic changes in the myoelectric parameters develop over an extended time. It is important to note the high degree of variability in the data as well. These facts demand frequent data collection over extended time periods. In cases where no systematic changes are manifested, one must be persistent because reinnervation has been reported to appear spontaneously as late as several years post injury."

"It could also be hypothesized that, in cases of peripheral nerve injuries, there are intact motor units that cannot be recruited voluntarily immediately post injury, due to, for example, sensory nerve tensions. If these units can be recruited at a later stage, due to such phenomena as regeneration of afferent nerves or central reorganization (training), the model will predict an increase in the amplitude parameter of the myoelectric signal and no significant change in the frequency parameter."

". . . myoelectric activity this can be attributed to increase metabolic function within the affected muscles."

"The present study was concerned with the evaluation of the regenerative process through measurement of efferent activity. To gain a complete understanding of the regenerative process in the patient, data derived by such measurements more specifically directed toward afferent pathways. There is currently, however, no objective method that can be used with the patient for such measurements."

(Ladd found that hard labor occludes oxygen absorption, but medium strenuous exercises are increasing blood circulation through the rhythmic movements, stimulating nerve regeneration, which proceeds in branching and in direct lines. His study shows the difficulties in measuring nerve regeneration in patients with the available instruments for such an undertaking. It is at that amazing that he was able to measure the progress of nerve regeneration at all.)

Leach, CS, Fisher, C: "Endocrinologic aspects of manned space flight". Paper presented at the *52nd Annual Meeting of the Endocrine Society*, St. Louis, June 1970

Leftoff, S.: "Perceptual Retraining in Adult Cerebral Palsy Patient: case of deficit in cross-modal equivalence", in: *Journal Clin Neuropsychol* 1: pp. 227 - 229, 1979

"A 23-year old cerebral palsy patient with multiple perceptual-motor impairments was found, on testing to have a severe deficiency in cross-modal transfer, which could account for many of these impairments. A training program to improve performance an cross-modal transfer problems was perceptual learning. The training was carried out over a one-year period. The patient's performance improved on cross-modal tasks as well as on specific training. This study indicates that even long-standing neuropsychological deficits are amenable to training.

(It is never too late to start!)

Naftchi, N. Eric, PhD, Institute of Rehabilitation Medicine, 400 East 34th Street, New York, N.Y. 10016. "Mineral Metabolism in Spinal Cord Injury," in: *Arch Phys Med Rehabil* Vol 61, Mrch 1980, p. 139 - 142. "Hydroxyproline is the main component of the bone matrix. Its break-down gives way to bone resorption. The highest concentration of urinary calcium are seen during the first 7 weeks after injury.

"In healthy subjects following prolonged bed rest the degree of calciuria was lower than that in spinal cord injured subjects." -- "Similarly, in astronauts returning from space missions the sequelae were comparable to those of acute quadriplegic subjects."

"The charts show that calcium excretion crests during the 5th week" after onset of immobility. By the 10th week it has leveled out for the duration."

"The elevated excretion of calcium and hydroxyproline reflects loss of bone mineral and matrix."

Oliver, Robert A., "Isometric Muscle Contraction Response During Recovery from Reduced Intramuscular Temperature," in: *Arch Phys Med Rehabil* 60: pp. 126 - 129, 1979.

"This study was done to determine the effects of a 30 minute cold water bath on intramuscular temperature and during a 3 hour posttreatment recovery period. Twenty persons were tested twice, receiving treatment once and serving as control once." . . . "Intramuscular temperature significantly decreased immediately posttreatment on the experimental days and then increased significantly during the recovery period. A definite relationship exists between intramuscular temperature and plantar flexion strength." . . . "maximal voluntary muscle contractions during the 3 hour period following the submersion of a leg in cold water at about 55 degrees F° for 30 minutes.

(Cold water seems to help cut down spastic movements. To go swimming, walking in a cold swimming pool for 10 to 30 minutes with exercises following is very beneficial. If it is available take your child to a cold and then good warm whirl pool, where the water will induce movements. Or change from a good warm whirl pool to the cold pool, and back again at least twice.

There are other massages for the shoulder and the neck, whereby you first take ice chips on a towel and place it for 5 minutes on the affected area and then massage it with lotion. It surely will contract even overstretched muscles and strengthen them. This is especially helpful in getting the neck muscles in shape for those who have trouble with head control.)

Pettitt, Barbara. P., MD "Lower Extremity Surgery In CP", in *Arch Phys Med Rehabil* Vol 57, 1976 pp 443 - 448.

"Surgery in cerebral palsy is rarely an end in itself, and ultimately will fail if the achieved correction is not maintained by proper management later on."

All Surgery in children under 12 years of age is suspect, cosmetic, and/or subject to recurrence. "Any surgical procedure which removes adequate hamstring opposition to the quadriceps will result in an extension deformity of the knee. Therefore, inaccurate estimation of antagonist spasticity, weakness or opposition may result in a surgical procedure producing a deformity opposite to that which it had been intended to correct."

"Sharrard, however, cites one study which found unsatisfactory results in nearly 40% due to recurrence of valgus deformity. . ."

"The main complication of adductor tenotomy is wide, unopposed hip abduction, often more a hindrance to ambulation than overactive adduction."

"Contraindications to surgery, other than those already discussed, include lack of head control, lack of balance and

equilibrium reactions, persistence of strong tonic pathological reflexes, and concurrent medical conditions which make surgery prohibitively risky."

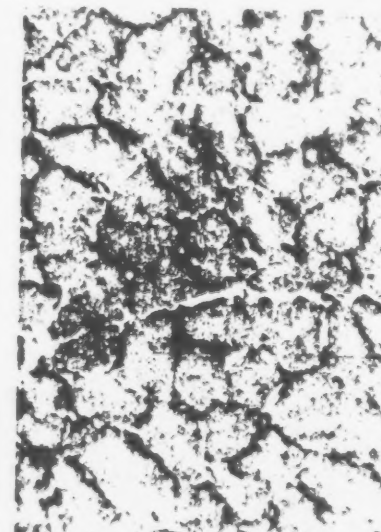
"Evaluation of surgical results in the cerebral palsied patient depends on the goal in mind, and on realistic planning of postoperative physical therapy and bracing. Where the goal is ambulation, a scoring system based on functional results, such as improvements in sitting, standing, walking and climbing stairs, would seem superior to an evaluation system based on muscle testing of ...the patient in nonfunctional positions.

Phelps, W.M. MD "Complications of orthopedic surgery in treatment of cerebral palsy" in: *Clin Orthop* Nr. 53, pp 39 - 46, 1967

IMMOBILIZATION ATROPHY, Corderos



cross section of casted soleus (original magnification, x340).



active muscle

Restak, Richard M., MD, *The Brain* (Toronto, N.Y., 1984)

370 pp.. on page 88/9, Restak is talking about the cerebellum:

"In a phrase, the cerebellum is responsible for coordinating muscle tone, posture, and eye and hand movements. To do this the cerebellum receives sensory information from every part of the body. This information is then synthesized into body maps at the cerebellum's anterior and posterior ends."

"The anterior lobe of the cerebellum may be damaged by the cumulative effect of alcohol over many years (example of man losing control). . . A patient once described his problem with his right cerebellar hemisphere in these words: "The movements of my left hand are subconscious, but I have to think out each movement of my right arm. I come to a dead stop and have to think before I start again."

Restak: "It would be a dull world indeed if every activity, no matter how trivial, had to be shunted through consciousness before it could be carried out."

Page 301: "The Blood-Brain Barrier

The brain is unique among other bodily organs by virtue of a blood-brain barrier. In contrast to, say, the liver or the spleen, the brain receives only some of the many substances in the circulating blood plasma. Other substances aren't permitted entry. For example, many large proteins can't pass from general circulation into the brain while other substances, such as nicotine, are allowed free entry. (this is one of the reasons why cigarette smoking is addicting.) This arrangement whereby the brain exists in a state of splendid isolation is made possible

by special structural features in the capillaries (blood vessels) surrounding the brain cells. These brain capillaries are uniquely constituted so that in order to enter the brain, substances must pass directly through the cell membranes rather than through small "clefs" in the walls of the capillaries — as they would throughout the rest of the body.

". . . Thanks to the blood-brain barrier, the brain is protected against the unpredictable and often-times uncontrollable fluctuations in the content of many blood plasma constituents.

Illustration: A drug enters the neural network by passing through the uniquely structured outer membrane of a brain capillary. It will go on to alter the chemical messages being transmitted across the nearby synapse

In the following Restak discusses the effects of the various drugs on the brain.

Walker, S. III. MD, "Drugging the American Child: We're Too Cavalier About Hyperactivity.", in: *Psychology Today*, Nr. 8 pp. 43 - 48, 1974

"Drugs almost always mask underlying causes. " Already in 1974 "10 to 15% of the children of some school districts are taking potentially dangerous drugs prescribed by the family physician. . ." He stresses "the potentially dangerous side effects of Ritalin and amphetamines since their use does not result in a cure."

(Especially cerebral palsy children are prescribed valium and phenobarbituates as early as five and six months old. They are still on valium at twenty years of age and for the rest of their lives. They are indoctrinated with the phrase that handicapped is beautiful, and they let no one touch them; and if some one does, they let you know that being "touched is demeaning".)

Baltimore has a clinic where they undertake to detoxify infants and children under 8, headed by Dr. Pauli. Many are referred to her clinic from all over the US, because of convulsions and toxic side effects. They have a team of trained physicians and sequester the baby or child for 5 days from the parents and move only when there is consensus on the case; they hold the admiration of their pediatric peers.



ABOUT THE AUTHOR:

H. Winky Lotz has worked with handicapped children and adults for over 25 years. She has studied for her M.A. at the University of Pennsylvania, and for her Ph.D. at the University of Basel Switzerland and Freiburg, Germany.

During 1970 and 1971 Winky Lotz had the opportunity to observe the latest techniques for young children to overcome the crippling effects of movement inability, leading to CP.

Winky came to the conclusion that: **CRIPPLING IS NOT NECESSARY** and, if crippling is not necessary, **CEREBRAL PALSY IS NOT NECESSARY** either.

She established the MAXI-MOVE INSTITUTE at the end of 1974, helping parents with cerebral palsy children to overcome partial and complete crippling.

She approached NIH and was told that if she knew that her technique is successful and was able to demonstrate it, then it was no longer necessary to be studied by NIH to prove the case.

Winky tried to interest the Cerebral Palsy Association, and was told that "*especially if her program worked, we*

are not interested because we have to protect our own for which we have spent millions."

She turned to dear Jerry Lewis in Charlottesville and was told that she would be able to get a grant for her project, if she found a physician who had to be the receiver. (Filing the forms, etc.)

She found three who were willing to see the project through. The last one told her, that he was very diplomatically railroaded into defaulting, because of threats with license requirements. Since the physician is not a necessity, it was not worth the risk to him.

The grant was announced to her by the Maryland Cerebral Palsy Association and then lost in the shuffle of personnel changes.

The program has been put together from the best programs developed in seven countries in which Winky was allowed to observe, and from her own experiences. Her experiences were gathered in Switzerland, Austria, Germany, Poland, France, Denmark and Italy.

The ROTARY REORIENTATION PROGRAM came from Switzerland. There it had no particular application at the time. For her, it became a fantastic tool for upgrading mentally handicapped babies under 2 years and for CP children of any age to enable them to sit and stand, and to hold their balance. She even tried it successfully with all ages of accident victims who had dizzy spells and were

disoriented, and unable to hold their balance. She found that it took 6 - 8 weeks before the problem was forgotten.

The Air Splints were put on the market for easy transport of severely injured people to the hospital. For her, there is nothing more ingenious for heavily involved CP to assure forced blood circulation while it holds the muscles in place, without permitting them to move.

In the course of habilitation, nothing is required which cannot be done readily at home. Time and love cannot be hired or paid with money. There are no alternatives. This is the only program which is cost effective in time and money. At that, it includes all the family, even young siblings are welcomed to get into the act and help.

You have to remember that this program was developed before the now so popular aerobic programs for physical fitness, and before the rehabilitation programs now gradually applied to stroke victims. In all these programs the Europeans had been leading, long before the first modest programs were run in our country. Do they work? Of course they do.

With this manual, for the first time, long suffering parents are receiving a tool to habilitate their little one in shortest time and without a lot of equipment. What we need can be put into a small box. Even though the Baltimore area certainly is not disadvantaged as to shopping and manufacturing, the author had a most difficult time trying to obtain the necessary items to meet

her requirements. She traveled a thousand miles in circles, unable to be accommodated. If it is that difficult here, it most certainly is true also for your region. Therefore we found suppliers and importers throughout the USA who are willing to make child size air splints, and supply the right size of tambourine, the pipes which are easy to blow, etc. Why should you become frustrated before getting started? We have them on hand.

Because this is a new program, we offer parents a number of WORKSHOPS / RETREATS in a luxurious setting in the Poconos, Miami Beach, among others, so that they can get a head start and take heart that it does work on their child. At the same time, parents can relax and enjoy a vacation of 14 days/nights, Easter or Thanksgiving. Each of the resorts has extended to us their RED CARPET HOSPITALITY.

Linthicum, Md. September 1986.



NO CRIPPLING!

TABLE OF CONTENTS

	Page
Dedication	
Introduction.....	1 - 3
Cerebral Palsy is not necessary.....	4 - 5
How does this program differ?.....	6 - 13
RELAXERCISE	14 - 15
MAIN CARRY HOLD	16
Chapter I	
Arm Exercise.....	17 - 21
NO DRUGS PLEASE!	22
Leg and Back Exercises.....	23 - 27
Chapter II	
Aerobic Fitness Program.....	28
----Oxygen.....	29
----Nerves.....	30 - 32
The Hand.....	33
Why the Maxi-Move program?.....	34 - 37
Chapter III	
The Tambourine Game.....	38 - 39
Head Exercises.....	40 - 42
Neck Exercises.....	43
ROTATION EXERCISE FOR BALANCE	44 - 45
Chapter IV	
Hand Exercises.....	46 - 50
Turning Exercises.....	51 - 52
II Progressive Exercises	
Back & Leg Exercises.....	53 - 54
Chapter V	
Back and Leg Exercises.....	55
Back and Shoulder Exercises.....	56 - 57
LADDER EXERCISES	58 - 61

Chapter VI

GUIDELINES FOR SPASTICS	62 - 63
Arm exercises with AIR SPLINTS	64 - 65
First Foot Exercises with AIR SPLINTS	66 - 67
Arm Exercises with AIR SPLINTS	68 - 70

Chapter VII

The Mouth.....	71 - 78
Swimming.....	79 - 80

REFERENCES

Alphabetical Listing.....	I - XI
---------------------------	--------

Order List for hard to get items

Order Blanks

Calendar by the week

WORKSHOPS & RETREATS

Poconos Mountain Resort—Miami Beach

----Easter Holidays—Thanksgivings

About the Author

MAXI-MOVE INSTITUTE
 112 Mountain Road
 Linthicum Heights, Md. 21090
 (301)-789-0241

***ITEMS LISTED AS AIDES FOR REHABILITATION
 AVAILABLE FOR PURCHASE**

<u>ORDER#</u>	<u>DESCRIPTION</u>	<u>UNIT PRICE</u>
~~~~~		
<b>#1</b>	<b><u>TAMBOURINE</u></b> Durable 7" head with easy-grip rim & 6 pairs of metal jingle.....	8.50
<b>#2</b>	<b><u>PIPE/WHISTLE</u></b> 9" tube with slide handle for a full octave, easy to blow.....	2.10
<b>#3</b>	<b><u>BALLS</u></b> Indestructable activity balls, 2.3/4" diameter. Quantity 2.....	1.80
<b>#4</b>	<b><u>STRAWS</u></b> 2 non-collapsible, clear-flexible plastic, 12" Nr.1 & Nr.2 hole.....	0.60
<b>#5</b>	<b><u>SWIM WINGS</u></b> Efficient, light-weight, no inter- ference with swim activity.....	4.10
<b>#6</b>	<b><u>ARM AIR SPLINT</u></b> Child size, easy inflation by mouth, (measure arm) washable, X-Ray transparent.....	8.60
<b>#7</b>	<b><u>LEG AIR SPLINT</u></b> Child size as above, immobilizes (measure leg) limb, aides blood circulation.....	10.60
<b>#8</b>	<b><u>MEDIRIP</u></b> Self-adherent bandage, used instead of wristlets, elbow & knee.....	2.00
<b>#9</b>	<b><u>WRISTLET</u></b> Velcro fastener, fits all sizes.....	3.50
<b>#10</b>	<b><u>CERVICAL COLLAR</u></b> Child.....	5.00
<b>#11</b>	<b><u>LATEX EXAM GLOVES</u></b> State hand size: small, medium, large, for mouth ex. Box of 50.....	7.20
<b>#12</b>	<b><u>MAXI-MOVE MANUAL</u></b> .....	24.00

## CEREBRAL PALSY NOT NECESSARY

### MAXI-MOVE WORKSHOPS AND RETREATS:

Fourteen days/nights in holiday setting: CP workshops are held at various places and times during the year, in Miami Beach, in the Poconos Mountains, March/April, over Easter and Thanksgiving holidays. **Vacation with a purpose!** Luxurious accommodations, 3 meals a day and snacks for two adults/one CP child; all resorts include scheduled activities for all ages, golf, archery, tennis, bowling, dancing, shows, live entertainment.

Here an example of a workshop schedule:

AM 9 -10, 11-12, learning exercises (10-11 snacks).

Noon: Children's lunch, nap. Lunch for adults

PM 3 - 3:45, and 4 - 5:45 (Pool, sauna, whirlpool)

Naps & evenings: Babysitter provided so adults can enjoy dinner and entertainment without worry about their child's well-being.

Rates include all costs of the workshop and retreat for 2 adults/1 CP child, inclusive meals, service, taxes & gratuities. (Costs range from \$196 - \$330/day, and from \$16 to \$32 for other children; prices subject to change without notice.)

**CP CHILDREN MUST BE UNDER AGE EIGHT**

**CHILDREN WHO HAD OPERATION BECAUSE OF THE HANDICAP CAN NOT BE ACCEPTED!**

The degree of involvement does not matter.

**BACKROOM** children are accepted.

All children must have a certificate of good health.

To hold a workshop, we must have at least 15 CP children, but no more than 30. Additional workshops will be scheduled when we have 15 children we cannot include in existing workshops.

### Goals for the workshop:

- a) to get the little one on the road to moving normally;
- b) to get his metabolism started;
- c) to have parents leave with the confidence that they can carry through the project to see their child lead an INDEPENDENT LIFE.

=====

MAXI-MOVE INSTITUTE-----Tel. 301-789-0241  
112 Mountain Road  
Linthicum Height, Md. 21090

Name _____  
Address _____  
City _____  
State _____ Zip _____  
Phone (Home) _____ (Work) _____  
CP child's birthday: _____ Involvement: _____

For detailed information, schedules, and brochures, send \$7.50.

Upon your acceptance, you will be sent this instruction manual and rehabilitation equipment needed for the workshop. If the materials are returned within 10 days, full refund will be made. If you must cancel the workshop, your deposit will be refunded in full if we are notified at least 8 days prior to the start of the workshop.





133

# WEEKLY

# WEEKLY

JAN FEB MAR APR MAY JUN

JUL AUG SEP OCT NOV DEC

DATE **MONDAY**

SCHEDULE

ACTIVITIES

**TUESDAY**

SCHEDULE

ACTIVITIES

**WEDNESDAY**

SCHEDULE

ACTIVITIES

200

**THURSDAY** DATE

SCHEDULE

ACTIVITIES

**FRIDAY**

SCHEDULE

ACTIVITIES

**SATURDAY**

SCHEDULE

ACTIVITIES

**SUNDAY**

SCHEDULE

ACTIVITIES

201

# WEEKLY

JAN	FEB	MAR	APR	MAY	JUN
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# WEEKLY

	JUL	AUG	SEP	OCT	NOV	DEC
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DATE **MONDAY**—

## SCHEDULE

## ACTIVITIES

**TUESDAY**

## SCHEDULE

## ACTIVITIES

WEDNESDAY

## SCHEDULE

## ACTIVITIES

262

THURSDAY DATE

## SCHEDULE

## ACTIVITIES

**FRIDAY**

## SCHEDULE

## ACTIVITIES

SATURDAY

### SCHEDULE

## ACTIVITIES

**SUNDAY**

## SCHEDULE

## ACTIVITIES

293

JAN	FEB	MAR	APR	MAY	JUN
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# WEEKLY

**WEEKLY**

JUL	AUG	SEP	OCT	NOV	DEC
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_____

DATE **MONDAY**

### SCHEDULE

## ACTIVITIES

**TUESDAY**

### SCHEDULE

## ACTIVITIES

WEDNESDAY

## SCHEDULE

## ACTIVITIES

264

THURSDAY DATE

DATE:

### SCHEDULE

## ACTIVITIES

**FRIDAY**

### SCHEDULE

## ACTIVITIES

SATURDAY

## SCHEDULE

### ACTIVITIES

**SUNDAY**

### SCHEDULE

## ACTIVITIES

205



NO Crippling  
DRUGS  
OPERATIONS

A ONE YEAR  
HOME PROGRAM  
THE MAXI-MOVE MANUAL

## CEREBRAL PALSY NOT NECESSARY

### MAXI-MOVE WORKSHOPS AND RETREATS:

Fourteen days/nights in holiday setting: CP workshops are held at various places and times during the year, in Miami Beach, in the Poconos Mountains, March/April, over Easter and Thanksgiving holidays. **Vacation with a purpose!** Luxurious accommodations, 3 meals a day and snacks for two adults/one CP child; all resorts include scheduled activities for all ages, golf, archery, tennis, bowling, dancing, shows, live entertainment.

Here an example of a workshop schedule:

AM 9 -10, 11-12, learning exercises (10-11 snacks).

Noon: Children's lunch, nap. Lunch for adults

PM 3 - 3:45, and 4 - 5:45 (Pool, sauna, whirlpool)

Naps & evenings: Babysitter provided so adults can enjoy dinner and entertainment without worry about their child's well-being.

Rates include all costs of the workshop and retreat for 2 adults/1 CP child, inclusive meals, service, taxes & gratuities. (Costs range from \$196 - \$330/day, and from \$16 to \$32 for other children; prices subject to change without notice.)

**CP CHILDREN MUST BE UNDER AGE EIGHT**

**CHILDREN WHO HAD OPERATION BECAUSE OF THE HANDICAP CAN NOT BE ACCEPTED!**

The degree of involvement does not matter.

**BACKROOM** children are accepted.

All children must have a certificate of good health.

To hold a workshop, we must have at least 15 CP children, but no more than 30. Additional workshops will be scheduled when we have 15 children we cannot include in existing workshops.

### Goals for the workshop:

- a) to get the little one on the road to moving normally;
- b) to get his metabolism started;
- c) to have parents leave with the confidence that they can carry through the project to see their child lead an INDEPENDENT LIFE.

=====

MAXI-MOVE INSTITUTE-----Tel. 301-789-0241  
112 Mountain Road  
Linthicum Height, Md. 21090

Name _____  
Address _____  
City _____  
State _____ Zip _____  
Phone (Home) _____ (Work) _____  
CP child's birthday: _____ Involvement: _____

For detailed information, schedules, and brochures, send \$7.50.

Upon your acceptance, you will be sent this instruction manual and rehabilitation equipment needed for the workshop. If the materials are returned within 10 days, full refund will be made. If you must cancel the workshop, your deposit will be refunded in full if we are notified at least 8 days prior to the start of the workshop.